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Ornithology

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THE CONDOR

VOLUME XLII

SEPTEMBER-OCTOBER, 1940

NUMBER 5

OBSERVATIONS ON THE BLACK-FOOTED ALBATROSS

WITH THREE ILLUSTRATIONS

By LOYE MILLER

A general paper on the maritime birds that occur off San Diego, California, was contributed by the present writer (Condor, vol. 38, 1936, pp. 9-16) several years ago. Some notes on the Black-footed Albatross (*Diomedea nigripes*) were there included. In the course of the following four years much time has been spent on the off-shore waters with the result that a large amount of additional information on this species has been assembled. The opportunity to do this work was afforded by the Scripps Institution of Oceanography during the many cruises of the "E. W. Scripps" and by the State Division of Fish and Game during one cruise of the "Bluefin" when the two organizations were cooperating in exploratory work. To both these organizations my sincere thanks are extended, not only for the opportunity to work this scientific field, but for the cordial cooperation in every way that added to the effectiveness and to the personal comfort of each day's work.

In addition to several shorter trips, I took five extended cruises into the albatross "territory" with ample time for careful check on the bird population. Three of these longer trips offered the advantage of visiting the same thirty stations at intervals of two to twelve months. At each of these stations the ship remained for a period of hydrographic work which lasted several hours and which offered unparalleled facility for observation on such birds as appeared during that time. Careful count of numbers, records of individuals either marked or recognizable by plumage, notes on behavior, social relations, experiments on feeding—all filled such periods with unflagging interest.

The area most critically studied was included within a rough quadrangle which extended along the coast from San Luis Obispo to San Diego and out to sea approximately two hundred miles. This area included the channel waters, the coastal islands of southern California, and the outside waters to distances well off the continental shelf. The area was transected along four parallel lines, at right angles to the coast, at San Luis Obispo, Santa Barbara, San Pedro, and San Diego. On each of these lines from seven to eight stations were occupied at intervals of fifteen or thirty miles, and a period of approximately two weeks was required for each cruise. South of the Mexican border a similar area was explored along lines running out from Ensenada three hundred and fifty miles, thence south along a line parallel to the coast, and again shoreward into Sebastiano Viscaino Bay south of Cedros Island. This cruise was taken but once. June, July, August and early September were the only periods when my academic duties allowed participation in the work, except for one February trip down the coast and into the Gulf of California. On this latter cruise we ran three hundred miles off shore to take advantage of prevailing winds. No albatross was seen in February. Most of the results here recorded consequently are derived from observation during the summer months—a time which finds the Black-footed Albatross in a non-breeding condition, dispersed most widely over the North Pacific Ocean, and entirely divorced from the land.

Much of the area which we cruised was outside the coastwise steamer lanes and far from the influence of chumming activity of commercial fishermen. Many of the albatrosses appeared to be unacquainted with man and his artifacts. I felt that I was studying wild birds that were relatively unspoiled.

While at sea the corps of oceanographers gathered most accurate data on subjects ranging from the bottom sediments to the bacterial flora of the air at the mast head ninety feet above the deck. The physics, chemistry, dynamics, and biology of the water were minutely examined and recorded. A great variety of conditions was encountered—surface currents, eddies, upwelling, floating organisms, drift masses, cetaceans, schools of larger fishes. All such phenomena were recorded, with the result that we felt that we had a fairly accurate picture of the stage setting for any avian actors that might pass across the boards.

Many former impressions had to be profoundly modified and some new convictions became pretty firmly established. The layman might easily entertain the impression that the ocean is just ocean and therefore satisfactory to any oceanic bird wherever he might chance to alight upon it. Quite the reverse concept is built up in the oceanographer's mind. He looks at his data sheet and says, "Here is a mass of oceanic water," or "This is all shore water" (with no land in sight), or "Here is a region of upwelling."

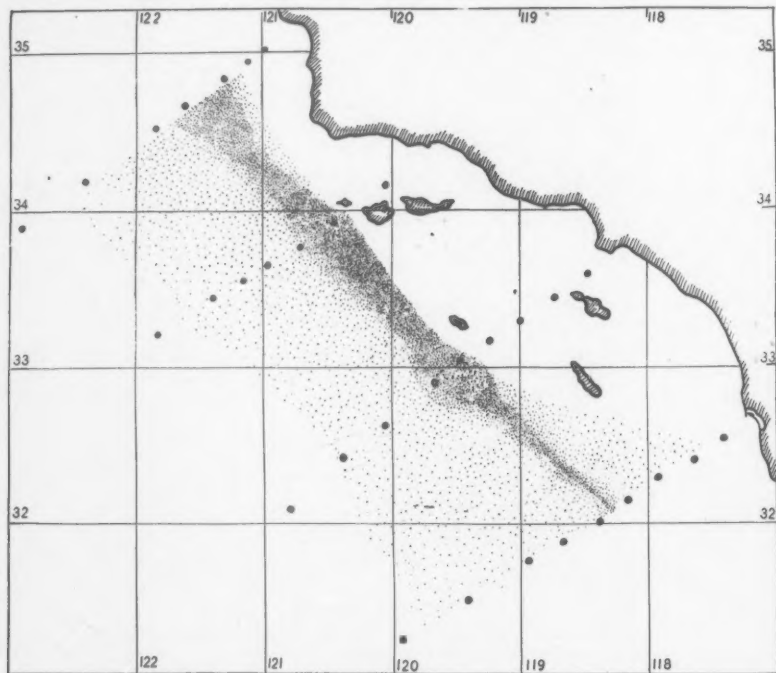


Fig. 65. Diagrammatic chart of the waters off southern California, showing by large dots the oceanographic stations visited. The stippling is designed to express relative concentrations of Black-footed Albatrosses in the years 1937 and 1938.

A definite cold "tongue" of water extends southward from the northern stations outside Point Concepcion and on past the outermost islands well beyond San Nicolas Island; it is even recognizable outside Cedros Island. Outside this zone the surface is warmer and within it the channel waters are relatively "balmy." This "tongue" proved to be of superior interest to the bird watcher. Here were the oceanic birds in greatest numbers.

Distribution.—The striking distributional pattern of the albatross and the factors that determine it furnish the chief impulse which has taken me to sea so persistently of late years. During my undergraduate days, more than forty years ago, parts of this pattern were recognized. Then it was learned that Black-footed Albatrosses were not found on channel waters but were immediately encountered after leaving Point Concepcion going north. That this fact was not due to latitude was proven ten years later by finding them not uncommon along the edge of the continental shelf west of San Diego. To this day I have never seen them well within the channel proper.

Once the species was seen fifteen miles south of Catalina Island and rarely it was seen over the deeper waters just out of San Diego. The scarcity of exceptions to the rule would establish rather definitely the fact that *nigripes* is not a channel bird. Quite in contrast appears to have been the habitat of the Short-tailed Albatross, *D. albatrus*. About 1889 I saw a specimen of that species that had come ashore on the Orange County coast. I have taken from the channel Indian mounds great numbers of their bones, but never any of *D. nigripes*.

Willett (Pac. Coast Avif. No. 21, 1933, p. 14) properly considers *albatrus* to be the common albatross on the channel waters a generation ago. Certainly *nigripes* was not absent from these latitudes at the time of his congener's abundance. The two birds seem to have divided the territory between them, as it were.

The cooler zone of water outside the channel seems to be the summer metropolis of the Black-foot. On passing out to sea into the warmer oceanic waters, one finds their number dropping down almost to zero. In fact, sometimes a whole day, or even two days, would pass without sight of a living creature over the sea surface. The return toward the edge of the shelf would again bring the birds in view in growing numbers. The maximum number of individuals seen at any one time was thirty-three. This record was made 45 miles southwest of San Nicolas Island. At this station my note book says, "Surface water 14° C., the coldest yet. We are in the cold 'tongue' of water coming down past Point Concepcion . . . for two hours after leaving this station albatrosses were all about us, some following and some in conclaves sitting on the sea surface off to one side or the other." A dozen to fifteen birds were commonly seen in the cold "tongue," though never more than five or six at stations outside this area.

There was no concentration about a single food supply, but the birds slowly drifted in from various quarters, apparently to look us over. The accompanying chart (fig. 65) is an attempt to indicate by stippling the relative abundance of the birds, as averaged from records of three trips during June and August of 1937 and 1938.

This area of concentration has no delimiting barriers other than those recognizable by the oceanographer. The term "cold tongue" by which this zone has been designated suggests that temperature might be the controlling factor. Distance from the land has also been considered to be of importance.

Both of these hypotheses had to be abandoned. In the open Gulf of California where surface waters were as cold as those off the southern California coast and where the storms drove us back into sheltered anchorage to escape the biting wind, there were no albatrosses. In the broad expanse of Sebastiano Viscaino Bay, with no land in sight,

they did not occur, but just as we crossed the 100-fathom line coming out, the water temperature dropped to 16° C., and the first albatross noted in several days was sighted. From this point on up the coast to Ensenada we had them in sight much as one sees them along the coast from Point Concepcion to Monterey off Alta California.

In all these instances of albatross concentration, we find bottom conditions practically the same, that is, the bottom rises fairly abruptly from extensive deep water to much shallower shelf waters. Within the channel there occur a number of deeps with shallower water adjacent. Likewise there are in the deep waters off the continental shelf (continental borderland) a number of limited submarine banks that do not come near the surface. In neither case are the conditions satisfactory for a concentration of albatrosses. In neither case is there produced that degree of turbulence that results in the "cold tongue" with its accompanying abundance of plant nutrients making for rich "pasturage of the sea." Micropasturage it may be, but nevertheless it is a powerful and fundamental link in that complex sequence of changes that convert solutes and sunlight into albatrosses, whales, or international crises.

Sverdrup and Flemming of the Scripps Institution have shown the "cold tongue" to be a zone of relative turbulence, rich in nutrient salts; Martin W. Johnson finds the zoöplankton to be derived in part (larvae of *Emerita*) from sand-dwelling species of the coastal strand line, thus completing a picture of turbulence that carries water from the shore outward for a distance of roughly a hundred miles. W. E. Allen finds in the "tongue" a wealth of phytoplankton early in the season that later is "grazed down" by the zoöplankton, producing bottom deposits very rich in diatomaceous remains. Here in this maelstrom of planktonic activity are found the greatest numbers, in fact almost the only specimens, of the Black-footed Albatross in southern California.

Individual territories.—As a species, the Black-footed Albatross ranges far, though irregularly, over the North Pacific. What can we learn of individuals? Has the non-breeding bird a territorial consciousness? In a field, a marsh, a forest, or a plain that appears to human eyes to be practically uniform, a land bird recognizes certain barriers within which he feels at home and across which he resents a trespass. The oceanographer has learned to recognize water masses with more or less invisible boundaries. Is the albatross an astute oceanographer? Certainly he is a marvelous navigator and seemingly water conscious. Much time was spent in watching individual birds that were recognizable by plumage, molt, or peculiarities of behavior. On four occasions also, I was able to mark individuals by flinging red pigment upon them as they approached the ship's rail. Unfortunately, the birds almost invariably kept up wind from the ship and shunned the lee, which fact gave my efforts a strong tendency to backfire and spatter the pigment over the wrong organism.

Notes on recognizable individuals were recorded at each station, with the result that some definite impressions were derived. One red spattered bird reported at a subsequent station fifteen miles removed. Other recognizable birds were traced for thirty miles, but no farther. As many as two or three birds might attend the ship for a brief period and then desert us through lack of interest presumably, but commonly they were replaced by others. Did they follow until they felt they were far enough "away from home" and drop out in order to return? The impression was repeatedly given that such was the case. Unfortunately, my revisiting of the various stations came at such long intervals that I could not expect to find paint-marked birds on a subsequent cruise.

In attempts at marking, an oil and distillate flux for vermilion pigment was employed for two reasons. First, it would not wash off, and second, only an oil would adhere to the plumage of this aquatic species. The pigment, when it struck the lighter

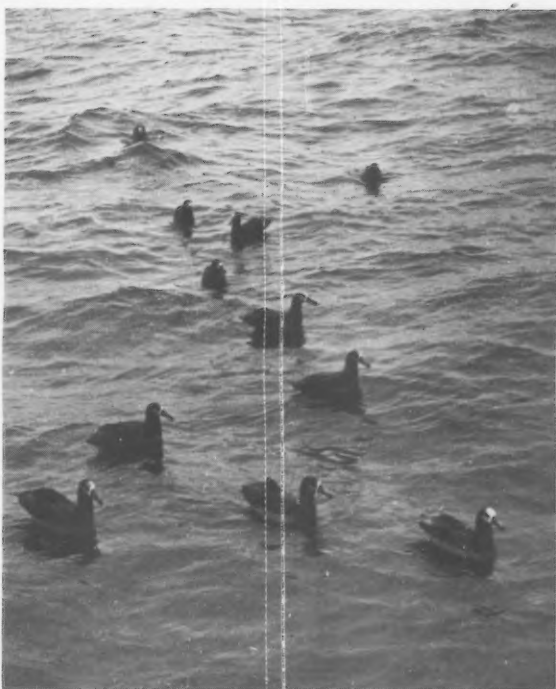


Fig. 66. Black-footed Albatrosses that assembled about the ship.

colored zone about the bird's beak produced an easily recognized mark that must have remained for some time before wearing away. It was out of reach of any preening activity of the beak, but was not infrequently bathed as the bird dipped into the water for food or toilet making.

Where birds have become habitual hangers-on in the regular steamer lanes, it is possible that they travel fairly long distances in the wake of a ship. Our vessel was not in continuous transit, neither was it a source of much food material. I feel quite confident that the birds were acting fairly "naturally" and that they showed a tendency to forage over a restricted area of perhaps thirty miles' diameter.

Other species noted.—Though this report is mainly devoted to the albatross, it perhaps would be permitted to note the presence of other species in the area. Black Petrels (*Oceanodroma melania*) were never seen outside the island barrier, whereas the smaller Kaeding Petrel (*Oceanodroma leucorhoa kaedingi*) and another species, probably *O. homochroa*, were seen and *kaedingi* was collected as far as one hundred and forty miles west of San Miguel Island. A Long-tailed Jaeger (*Stercorarius longicaudus*) was collected near the same point. One small tern and a Mourning Dove (*Zenaidura macroura*) were the only other birds seen far off shore. Surprisingly, the shearwaters seemed not to be interested in the area as a rule.

Gulls came into association with the albatrosses only when we were close in to the seaward side of the islands. On these occasions it was interesting to see how the rough

and tumble gulls bullied the big, mild-mannered albatrosses who did not seem to understand the street-gamin tactics of the smaller birds.

A species that surprised me by its abundance was the Red-billed Tropic-bird (*Phaeton aethereus*). More tropic-birds were identified in the channel and just outside than were seen in an equal period of time spent along the two coasts of Panama. I am strongly of the impression that the Red-billed Tropic-bird, like so many of our marine species of southern California, indulges in a post-breeding dispersal movement that may take it many hundreds of miles north of its breeding range.

Plumages.—Much interest was found in the great variety of plumages seen in *D. nigripes* during the summer. (1) The whitish area about the bill was found in all specimens. This area, however, varied enormously in the degree to which it expanded backward in all planes, that is, over the crown, brow, cheeks and throat. (2) The general body color was dark, but the tone might be slaty, fawn color with much yellow in it, or even ashy bordering on bluish. (3) The upper tail coverts might be almost entirely white, narrowly white, streaked with white, or wholly dark. (4) The under tail coverts might be entirely white (extending forward onto the belly proper), or marked by a transverse band of white not more than a half inch wide back of the vent, or they might likewise be wholly dark. (5) Flecks of dull white might appear on the occiput, hind neck, and throat. One such bird was even dubbed "Old Dominecker" and was fairly certainly recognized at a subsequent station fifteen miles distant. What basis of age, sex, or season can we find for this variability? I confess myself at a loss. Eight birds were dissected, three were white-rumped individuals and five were dark rumped. Only one bird was a male, all but one had gonads that showed previous activity. The virgin bird was dark colored with no white on the tail coverts. Independent counts were made by Dr. Roger Revelle and myself while at sea on different cruises. Without knowledge of the other's count, each estimated that white-rumped birds made up ten per cent of the population. If we credit the current literature and look upon the white rump as typical adult plumage, ten per cent would seem a small proportion of adults in a species raising but one chick per year. Furthermore, it would seem that the species commonly breeds in the subadult plumage. Possibly there is a concentration of subadult individuals along this coast, still only one virgin bird was found among the four dark birds dissected. A possible coincidence may have been responsible for the fact that more white-rumped birds were found in the northern half of our quadrangle than in the southern half during one cruise. Still, such was not the general rule and white-rumped birds were found far down the Mexican coast.

There appeared to be no correlation between whiteness of rump and either the paleness of body color or the backward extension of the light facial ring. In some individuals the paleness of crown and face is due in part to bleaching out of the feather pigments. A female with swelling ovaries was in the midst of its molt, with new dark feathers coming into the extensively bleached crown. The body plumage, which is not age bleached, is given a "scaled" effect by the abruptly paler margins of the feathers. This scaled effect was repeatedly seen among the many visitors that came close under the rail. It was not a weathering effect, nor could it be correlated with any other plumage character beyond a general lightness of body color. Paleness of body color was sometimes accompanied by paleness of the beak. Only the blackness of the feet seemed constant.

I am inclined to believe that this species, like so many other "tube-noses," has a wide range of color that is independent of sex, season, or age.

Food.—The impression which was gained from stomach examinations and from long days of watching the hundreds of birds that visited us during the several seasons would brand the Black-footed Albatross as a "feathered pig" insofar as the nature of his food is concerned. In table manners, on the other hand, one might say, he is a gentleman. In every stomach examined there were found squid beaks. Fish bones of good size were found in one stomach, great masses of fish eggs in two stomachs, and sea weed tips (*Macrocystis*) in another. On one of the cruises large numbers of a brick-red decapod crustacean were observed coming to the surface, presumably from deeper waters. These animals swam slowly about at or near the surface either in spawning activity or perhaps as victims of an infection that reduced their specific gravity to a point less than that of sea water. In the course of this decapod swarming an albatross was seen to void a great volume of excrement of brick-red color that could surely have had no other source than the crustaceans for its "carotenoid" pigment.

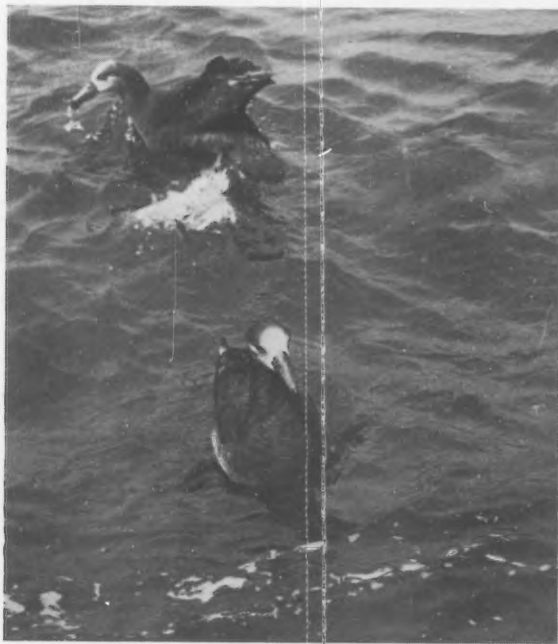


Fig. 67. Albatrosses come in close to feed. A white-rumped bird is in the foreground.

As to their preferences in galley waste, I found the albatrosses not without a certain discriminative judgment. Fats of all sorts appealed strongly. Plain bread was scorned, but the slight flavor of butter or crisco brought it into instant favor. Excess griddle cakes from the mess table were eagerly seized, presumably for the trace of fat they bore. Masses of congealed bacon fat that had been drained from the cook's kettles caused the greatest excitement among the birds as soon as the flavor was tested. One bird gulped a great mass of cocoa butter. Fat meat appeared to rate higher than lean meat. Never-

theless, pieces of watermelon rind sometimes appeared to attract them. I wondered if the fresh-water content was what appealed in this case.

Behavior during feeding was a matter of much interest. Except when greatly excited, which is seldom, they are most deliberate. A group of gulls would wheel and scream, and dip down to snatch food, then make off if a fellow gull were too close by, but these big, self-contained birds always settled on the surface and moved up to the floating morsel. If it started to sink through the clear water, the bird might reach down the length of the neck, but never farther than could be reached by the tip-up method of surface-feeding ducks.

Food was taken in the extreme tip of the beak where very sensitive taste buds must be situated, so quickly was the recognition of desirability of the object tested. There seldom seemed to be any conflict between individuals. If one fellow lost out, he watched with equanimity as his more fortunate neighbor took advantage of a nearer position. On the rare occasion when gull and albatross came into the same picture on the outer side of the islands, the albatrosses seemed astonished and quite disconcerted by the aggressive manner of the gulls. Certainly an albatross would not seem capable of taking an active prey. The squid beaks and the sizeable fish bones found in stomachs must have come from dead or moribund animals that were floating at the surface.

Birds were not infrequently seen to pick at floating, barnacle-infested bits of drift as well as at the basking sunfish (*Mola mola*). One of these sunfishes that was gaffed had a tremendous infestation of fish lice over its body and there were scratched lines on the skin that might readily have been marks of the sharp nail that terminates the albatross' beak. A sunfish was actually seen to swim toward a pair of resting albatrosses and turn on its side. However, the birds were disturbed before I could see any actual delousing take place. It does seem likely that they might act as "tick birds" for the great inert molas.

Kelp fronds were found in only one stomach, but a couple of birds were watched for some time as they pecked repeatedly and rhythmically at a floating mass of kelp. I am fairly confident that they were feeding upon the kelp and not upon attached animal life.

I have seen shearwaters churn the surface of the sea into spray as they darted about in pursuit of small fish, even swimming some distance completely submerged. No such impulse was ever observed in the albatross and I have come to look upon him as a gleaner of floating material that has ceased to be active. He certainly is not a predator in any sense of the word. Drinking of sea water by albatrosses was several times observed.

Activities.—So much has been written regarding the flight of albatrosses, chiefly that of the larger species, that I would not be justified in an attempt to add much. In fact, in regard to this small species, something might even be subtracted. For example, the larger species are reported to sail for long periods of time in a high wind without a flap of the wings, although constantly making adjustment of the plane angle. I never saw *D. nigripes* sail for as much as sixty seconds even in a smart gale. They behave much like a gigantic shearwater with a retarded wing beat and a longer glide. In quiet weather, the larger albatrosses are reported to sit about on the sea surface, reluctant to make the great effort required to rise and remain on the wing. *D. nigripes*, which is little more than one-third the weight of his greatest congener, is as busy in a flat calm as he is in a stinging gale.

The rise from a calm surface is always accomplished by dint of a brief "taxi" assisted by alternate strides, but they do not hesitate to rise. In a brisk wind the rise is almost straight off the water without a flap, much as a kite will sometimes lift in the wind when perfectly balanced and bridled. Alighting again may be accomplished in a

stiff gale with the appearance of falling-leaf freedom from effort. Quite in contrast is the ponderous way in which they take to the water in calm weather. Launching a freight barge would be almost as graceful.

The generic name of the delicate Storm Petrel (*Hydrobates*) refers to its treading of the sea surface as it seems almost to float between air and water. Its big diomedine cousin was often seen in a gale to do just the same thing. Its extended wings motionless, the breast free of the water surface, with its great expanded foot webs affording the slight additional support needed, the bird appeared to stand momentarily upon the limpid sea water. Again, like an expert ski runner it would slip along the steep side of a great snow-crested blue mountain, the uphill leg sharply bent and the other fully extended.

The close approach of the birds while the ship lay hove to afforded many long but interesting hours of contact with these wanderers which enabled me to observe them sometimes at distances of as little as eight or ten feet. One even nipped playfully at the blade of my resting oar while I was out in the skiff. Sea birds in a nesting colony may be approached equally near, but they have always seemed to me out of their element and a bit awkward on land. Here I was the awkward intruder into what was their real element and their perfect at-homeness was a constant delight to me.

Upon the water our birds were as competent as when above it. A wind-cuffed wave crest might seem about to wreck a swimming bird, but he would ride it as lightly as the foam itself. A slight spread of wing might assist him over it or the spray might rarely spatter him, to run off like drops of quicksilver. Never was he to the slightest degree disconcerted by the most violent and complex pathway that his body described in the three (or was it four) dimensions of space.

Forward strokes of his great paddles would throw him quickly into reverse if a wave brought him too close to the ship or to other source of potential danger. Opposite action of the two paddles would spin him about in the pivot-like whirligig of a phalarope, or their concerted action would send him through the water with a distinct "bow wave." While the ship was towing the plankton nets at a speed of 1.8 knots, a bird easily overhauled us "on foot" after a brief stop in our wake.

Social Relations.—Pure curiosity appeared to be the chief factor that concentrated the birds about our ship from an indeterminate area surrounding each station. Although food which we threw out would attract them close up to the ship's side, it appeared to be a strong social impulse that held them together in a loafing group on the sea surface. These groups were almost invariably up wind from us so that the easiest take-off would be directly away from the ship. This reaction seemed to me to be entirely instinctive, for they were entirely lacking in timidity. Individuals would swim close together, frequently rubbing beaks or "caressing" each other about the head. Often, with the ship underway, we would approach a pair or a trio sitting quietly on the water. There seemed to be no food supply to act as a focus—just pure sociability. When wheeling about over the sea surface, they seem a lonely bird, but when they sit down, they appear to like company. Only once or twice in the course of all my watching did I observe anything in the way of peck dominance, that term so popular with present day students of bird sociology. Frequently there were vocal interchanges where two birds approached with closed beaks raised at an angle above the horizontal and emitted a low, nasal groan, after which they separated. Another approach, when food was present or suspected, seemed to be a begging action. Here the beak was held wide open and a squealing note was emitted which was practically identical with that of young domestic pigeons. The only other sound heard from them was a sharp castanet-like rattling of the mandibles,

the significance of which was not clear to me. Walter K. Fisher (Condor, vol. 6, 1904, p. 78) speaks of the albatross "dance" having been witnessed by Dr. Charles Gilbert while the birds were sitting together on the water. This beak rattling and the nasal groan are perhaps part of such a display, but I saw nothing else that could be so interpreted. On the whole these great birds gave the impression of friendly dignity, getting along peacefully with their own kind and showing a companionable interest in us that was quite apart from any gastronomic urge.

I saw no evidence of their having any competitors or any external enemies in their normal habitat. Once a Pomarine Jaeger far off shore made a half-hearted stoop at a pair of albatrosses sitting on the water, but the birds took no notice and the jaeger did not take himself seriously. The albatross does not often take food that would be of interest to a jaeger. An adult sea lion visited us at one station west of the islands and in his cruising about us, swam right through a small group of Black-foots sitting quietly on the water. The birds paid no attention to him. On the other hand, when our deck boy submerged and started swimming under water in their direction, a pair took wing at once and left in haste.

Although the albatrosses appear to encounter no predator that is a menace to their well being and although they seem so well adapted to their mode of life that only a very sick individual would be buffeted seriously, there are a number of smaller species that serve to dilute their perfect happiness. Flat flies and a variety of smaller arthropods inhabit the feather stratum with more or less disturbing effect, it would seem, for one of the oft-repeated remarks of the crew members watching the birds on the water was, "They seem to have plenty of cooties on them." Part of the seeming "cootie hunt" was doubtless due to the preening of growing feathers, since at the season of my observations most individuals were in the process of molting some of the feathers.

Round worms were taken from several stomachs, but in no instance were they found in great abundance. The identities of these several parasites have not yet been worked out. Dr. Sherwin Wood discovered no blood parasites in smears from the birds freshly collected.

The only albatross that I have ever found cast up on the beach in many years of "beach combing" was picked up on the shore of Monterey Bay. It was a female in molt and had an ovarian cyst six millimeters in diameter—again, the only case of the kind that I have ever met with. Birds taken at sea were all in good condition, although happily for me, they lacked the excessive fat accumulations so often found in non-breeding water birds.

A meticulous toilet is made by preening and bathing of the plumage and by washing the beak after each feeding act. The bill is lowered till the nares are immersed, then the head is shaken from side to side with great vigor. No ill odor was noted in the fresh birds, although after dry skins have been kept in closed cases for a time, the characteristic procollariform muskiness is evident.

All things considered, my distinct impression of the Black-footed Albatross is that of a big, cleanly, well-mannered bird of friendly, even playful disposition, with an abundant and perhaps excusable curiosity as to our presence and our activities within the realm of open ocean over which he presides. His benign expression and his confiding nature with, above all, his supreme ability to take care of himself made my acquaintance with him a great and genuine pleasure. I always look forward with high anticipation to my next meeting with *Diomedea nigripes*.

University of California at Los Angeles, March 21, 1940.

VARIATION IN THE INTRODUCED ENGLISH SPARROW

By DAVID LACK

In studying variation in the Galapagos finches, Geospizinae (Lack, in press), it was thought desirable to have some bird of similar size and habits for comparison. Accordingly, the English Sparrow (*Passer domesticus domesticus*) was selected, since at the same time one could test the interesting evolutionary point of whether or not it had changed significantly since its introduction into the United States. Three measurements were taken: the culmen from the nostril to the tip of the bill, the depth of the closed bill, and the standard wing measurement. Only males with black throats were measured. The depth of the bill was not measured in specimens in which the bill would not close properly. The wing was not measured in molting or worn specimens. The table gives the number of specimens measured, and the mean and standard deviation for each of these measurements. In deference to standard taxonomic procedure, I also give the maximum and minimum measurements, but in the present investigation they have little significance. The standard deviation is, of course, a much better means of estimating the variability.

Acknowledgments.—This study would not have been possible without the large series of *Passer domesticus* in the Museum of Vertebrate Zoology, Berkeley, assembled through the initiative of the late Dr. Joseph Grinnell. The latter was fully aware of the importance of collecting extensive material of this species, and he seems to have been the only worker to have acted on this. It is particularly unfortunate that more material is not available from the eastern states for the early years when the species was rapidly increasing, and it is to be hoped that material will be collected from areas to which the species has spread only very recently for comparison at some future date when the population has become stabilized. This particularly applies to the southern part of California, where there is some evidence that the species is changing.

I have also to thank the following museums for allowing me to measure their specimens: Los Angeles, San Diego, California Academy of Sciences (San Francisco), Museum of Comparative Zoology (Cambridge), United States National Museum (Washington), University of Michigan, Field Museum (Chicago), and American Museum of Natural History (New York). The majority of the European specimens were in the Rothschild collection now housed with the last-named museum.

Localities.—Almost all the English specimens were collected in the southern counties, a very few in the midlands and in the north. Most of the German specimens were collected at Augsburg, Bavaria. The heading "eastern states" includes specimens from New York, Connecticut, Rhode Island, New Jersey, Massachusetts, Pennsylvania, Washington, D. C., Virginia, and Maryland. The specimens from the three last regions were first treated separately, but were grouped with those from the other eastern states when it was found that they showed no significant differences from them in mean or standard deviation. For the "mid-western states" I selected three states from which large series were available, namely, Minnesota, Illinois and Wisconsin. "Southern California" includes the counties of Madera, Fresno, Tulare, Inyo, San Bernardino, Ventura, Los Angeles, Orange, Riverside, San Diego and Imperial, and with these are included specimens from Lower California, Mexico. Originally specimens from Lower California, and also specimens from extreme southern California (San Diego, Imperial, Riverside, Orange, and Los Angeles counties) were treated separately, but it was found that they showed no significant differences in mean or standard deviation from each other or from those of the other counties in the southern half of California listed above, so all were

grouped together. Specimens were measured from a few other states, particularly South Carolina and Colorado, but the series were hardly adequate, and they apparently resembled specimens from other parts of the United States (omitting southern California) and so were not included in the table.

Specimens from the eastern states were collected chiefly in the last fifty years, those from the mid-western states mostly in the last forty years, and those from Berkeley mainly between 1910 and 1917. In all cases this was after the initial period of rapid increase. Birds from southern California were collected mostly after 1916, those from Lower California from 1925 to 1928.

Only a geographic comparison of specimens was made. The question of whether city specimens differ from those of the countryside was not investigated, as sufficient material was not available from the same geographic region.

Measurements of Male *Passer domesticus*

Locality	Bill length (from nostril)			Depth of bill			Wing		
	Number	Mean, standard deviation	Range	Number	Mean, standard deviation	Range	Number	Mean, standard deviation	Range
England	122	9.28 σ .37	8.5-10.8	97	8.69 σ .35	7.9-9.5	109	75.7 σ 1.85	71-80
Germany	35	9.44 σ .36	8.7-10.2	30	8.86 σ .26	8.3-9.2	37	77.8 σ 1.91	74-81
Eastern states	109	9.44 σ .44	8.6-11.3	77	8.73 σ .30	7.8-9.4	107	77.2 σ 1.59	73-81
Mid-western states	79	9.51 σ .44	8.4-10.4	69	8.87 σ .28	8.0-9.3	77	77.6 σ 1.50	74-82
Berkeley, Calif.	91	9.37 σ .40	8.2-10.3	88	8.74 σ .29	8.0-9.4	77	76.7 σ 1.46	74-80
Southern Calif., Lower Calif.	70	9.70 σ .54	8.5-11.0	66	8.93 σ .31	8.4-9.5	67	77.2 σ 1.67	74-81
Honolulu	14	9.82 σ .30	9.4-10.4	14	8.71 σ .32	8.2-9.2	15	78.1 σ 1.60	76-81

Discussion of results.—It seems generally to be assumed that the sparrows introduced to America all came from England. This is not so. Most came from England, but Gentry (The House Sparrow at Home and Abroad, 1878, p. 34) records some brought from Germany, and though nearly all of these died, a few individuals survived, so perhaps (but not certainly) this stock persisted and interbred with the English birds. As pointed out by Kleinschmidt, German specimens average rather larger than English ones, but Witherby (Handbook of British Birds, vol. 1, 1938, p. 157) shows this is not sufficient to justify the separation of *P. hostilis*. Omitting for the moment the specimens from southern California, the table shows that American specimens average rather larger in both bill and wing than English ones, but, while this might mean that the original English birds had changed slightly, this cannot be considered proved since the American birds are not larger than German birds. Actually, the American specimens come much closer in average to the German population than to the English, despite the fact that at least the great majority of the original stock was English.

As regards bill length, the birds from the southern part of California and from Lower California average significantly larger than those from the other American localities, while the depth of bill is also great. They are also larger than the average for German specimens, so some evolution must have occurred, and it is interesting that this has been in the direction of the so-called "Allen's rule" which states that extremities (bill, legs) are longer in regions of warmer temperatures. The difference is only small, and further series ought to be collected from this region now, for comparison in the future. The wing does not show a corresponding increase in size. It may be noted that the subspecies of *P. domesticus* in India average rather smaller, not greater, in culmen length than European birds, which is against Allen's rule.

A small series from Honolulu averages slightly larger still. This might be because the original introduced specimens were atypical. Alternatively, as in southern California, some evolution may have occurred after arrival.

While the populations of southern California and Honolulu are slightly different, what the table chiefly demonstrates is the amazing stability of the introduced *P. d. domesticus*. In spite of an enormous expansion in numbers with, one would have thought, a reduced intensity of selection pressure, and in spite of subjection to most varied climatic conditions, *P. domesticus* in much of the United States shows no significant differences in either mean or standard deviation for bill and wing as compared with European birds. On theoretical grounds, one might have expected a rapidly expanding population to show greater variability in characters than a stable one, but the American *P. domesticus* measured are not more variable than the European birds, except perhaps for the bill length of specimens from southern California. (However, there are no adequate series available of specimens collected during the period of most rapid expansion, that is, in the years immediately following colonization, except in the case of southern California, where specimens have been collected a few years after the bird established itself.)

Bumpus (Biol. Lect. Marine Biol. Lab. Wood's Holl 1896-1897, p. 6) showed that the eggs of American *P. domesticus* are significantly different in mean size from eggs taken in England. He did not compare them with German specimens, and therefore his conclusion that evolution had actually occurred cannot be accepted until German specimens have been checked. He also found the American eggs to be much more variable than British ones, a conclusion which is unlikely to be affected by comparison with German material. This greater variability was what the writer had expected to find, but did not, in regard to bill and wing size of American as compared with European birds. A similar study ought to be carried out on European and American Starlings (*Sturnus vulgaris*) because in this species one can be certain of getting a large series in an area where rapid expansion is now taking place.

Correlation coefficients have seldom been worked out for birds, and accordingly the following results for the Berkeley population of *P. domesticus* may be of interest.

	Number measured	Coefficient of correlation
Wing: bill from nostril	76	+ .067
Wing: depth of bill	73	— .026
Bill from nostril: depth of bill	87	+ .155

The table shows there is no significant correlation between wing and bill; there is possibly a slight correlation between bill length and depth of bill, but the figure is not significant. This is in marked contrast to some of the larger geospizine species (Lack, in press), which show high positive correlations.

SUMMARY

1. Introduced *Passer domesticus* in America are remarkably stable in wing and bill measurements.
2. They show no significant differences from European specimens in averages for bill or wing except in southern California, where the bill averages slightly larger. There also are no differences in variability (standard deviation), except possibly for bill length in southern California.
3. There is no correlation between wing and bill, and no, or at most a very small, correlation between bill length and depth.

Totnes, South Devonshire, England, June 7, 1940.

A NEST OF THE ARCTIC THREE-TOED WOODPECKER

WITH TWO ILLUSTRATIONS

By E. G. ENGLAND

The bright yellow crown patch of a male Arctic Three-toed Woodpecker (*Picoides arcticus*) first attracted the writer's attention to this species on June 17, 1937, near Gold Lake, Sierra County, California. The bird was seen in an aspen grove about one hundred yards from the northwest shore of the lake, which is in the Canadian Zone at an elevation of 6500 feet. A few minutes later a female was seen, and a nest was discovered on the southeast side of a live aspen about ten feet from the ground. As soon as it became apparent that the young had hatched, a crude tower was constructed. This reached to the same height as the nest entrance and was placed about two feet away from it. After giving the birds three days to become accustomed to the tower, a camera was secured to it and focused on the entrance preparatory to taking pictures of the birds. A black linen thread was run from the shutter-release to the observer's station, which was in a clump of small aspens about thirty feet from the nest tree.

The birds paid little attention to the camera or the tower. The click of the shutter startled them at first, particularly the female whose alarm was communicated to the male. Both soon became used to it and disregarded it entirely.

All this time and during the previous two days the young birds in the nest continued to make a grinding, purring noise that was audible for a distance of thirty or forty feet. Throughout the observations the young kept up this constant buzzing which increased in volume as the parents approached. The only occasion on which the "purring" ceased was when a Red-breasted Sapsucker (*Sphyrapicus varius daggetti*) flew past the nest tree just as one of the parents sounded a harsh, clicking alarm call some distance away.

On June 25 about seven hours were spent observing the birds and making photographs. From eight until nearly eleven o'clock the visits of the parents were less than five minutes apart and were about evenly distributed between male and female. At eleven o'clock it was noted that the feeding intervals were becoming longer and that the parent birds did not regularly alternate their visits as had been done previously. The visits were then timed. Data for the midday feedings are recorded in the following table:

Time of arrival at nest	Sex	Interval since last feeding (minutes)	Interval since last feeding by same parent (minutes)
11:05	♀
11:29	♂	24
11:36	♂	7	7
11:45	♂	9	9
11:46	♀	1	41
11:59	♀	13	13
		(No observations for 30 minutes)	
12:44	♀
12:57	♀	13	13
1:07	♂	10
1:08	♀	1	11
1:12	♂	4	5

In this midday period there were six visits by the female and five by the male, which indicates that the work of feeding is about evenly divided. Of twenty-five visits observed, insects were seen in the parent birds' bills ten times; seven of the insects were large white grubs with black heads; three were black or brown insects. On one occasion the



Fig. 68. Male Arctic Three-toed Woodpecker at nest at Gold Lake, California.

male had two grubs held crosswise far back in his bill; the rest of the time the grubs were held lengthwise. Although the total number of visits to the nest was about evenly divided between male and female, it was apparent that they were not always in rotation but rather that there were three or four visits by one parent, then three or four by the other with occasional alternate visits.

Achilles (*Bird-Lore*, vol. 8, 1906, p. 159) states that these birds never alight directly at the nest entrance. The writer's observations in general corroborated this statement. Both parents usually lit on the opposite side of the tree from the entrance hole and at about the same height as the hole itself. This may have been because the camera was on the side of the entrance hole. Oddly, the male nearly always moved around to the nest



Fig. 69. Female Arctic Three-toed Woodpecker.

from the observer's left (counter-clockwise), the female from the right. This method of approach was varied only once when each bird came to the nest hole in exactly the opposite direction from usual. Also on one visit the female flew directly to the nest entrance.

Both birds always looked anxiously to the right and left before entering the nest, and always peered out to reconnoiter before leaving. On leaving the nest both birds frequently flew to the dead top of a tall lodgepole pine about a hundred yards away and drummed loudly. The female's drumming was noticeably softer and slower than the male's. Also, they drummed more frequently in the early morning between four o'clock and seven o'clock than at other times in the day.

Twice the male carried from the nest some white fibrous matter. This puzzled the observer who was not familiar with the method of nest sanitation employed by woodpeckers. Warren (Condor, vol. 14, 1912, p. 94) states in regard to the nest of an Alpine Three-toed Woodpecker that there were a few of the birds' droppings in the nest, indicating that some, at least, were removed. Irving (National Geogr. Mag., vol. 63, 1933, p. 459) shows a photograph of a female flicker (*Colaptes* sp.) about to depart from the nest with excreta from the young held in her bill. The caption further states that she flies away some distance before dropping it. It is probable that the light-colored material which was being carried from the nest by the Arctic Three-toed Woodpecker was excrement. Whether it was eaten or dropped was not ascertained.

Fifteen feet south of the woodpeckers' nest, and about ten feet higher, was the incomplete nest of a Western Wood Pewee (*Myiochanes richardsonii richardsonii*). When the first picture was taken of the female woodpecker, the click of the shutter so alarmed her that she flew up and lit near the pewee's nest. Promptly and vigorously the pewee chased her away, the much larger woodpecker offering no resistance. Later the male woodpecker lit on the limb which supported the pewee's nest; the pewee tried to drive him away, but he clicked his mandibles so angrily and loudly that the pewee abandoned the attack.

On one occasion the male had just reached the nest entrance when the female arrived. There was a sharp dispute and the male left without entering the nest. He flew to a near-by pine clicking his mandibles and calling harshly.

In the three seasons following the observations of 1937, the Arctic Three-toed Woodpeckers have not been seen in the region. Their nest was occupied in 1938 by a family of Mountain Chickadees (*Penthestes gambeli abbreviatus*) and again in 1939 by the same species. There were three other old nesting holes in the same tree, about two feet apart, and a number of other holes where nests had apparently been started and abandoned.

Chico State College, Chico, California, July 19, 1940.

BIRDS OF ANAHO ISLAND, PYRAMID LAKE, NEVADA

WITH FOUR ILLUSTRATIONS

By RICHARD M. BOND

Twenty-four hours on June 21 and 22, 1940, were spent on Anaho Island, in Pyramid Lake, Nevada, with Mr. Atwell Wallace, a Soil Conservation Service range surveyor. This was a very short visit, and much of the time was spent on a study of the plant life. Nevertheless, observations were made on birds there, and it is interesting to compare present conditions with those found by Hall (Condor, vol. 27, 1925, 147-160; vol. 28, 1926, 87-91) sixteen years earlier.

About 3000 half-grown young White Pelicans (*Pelecanus erythrorhynchos*) were present on the northeast part of the island. There had apparently been three or four nesting colonies, all close together. The lowest colony had the largest young, and also about 100 nests containing eggs or very small young. Hall, in 1924, found 13 colonies more or less scattered, with two on the flat top of the island, where no pelicans nested in 1940. On June 5 and 6 he found a total of 7050 eggs and young on the island in 4534 nests, but by June 21-22 only 1562 young remained. On the basis of number of young only, it would appear that the pelicans had about doubled in number since 1924. Hall, however, attributed about 75 per cent of the loss he found to human (Indian) interference. Indians apparently no longer take pelican eggs for food, and there was extremely little evidence this year of any past disturbance, except perhaps in the lowest colony where the fresh eggs found may indicate renesting. The area used by the nesting pelicans was much larger in 1924 than in 1940, and this would suggest that the population was larger in the former year. It is my impression that this is probably the case, and that the numbers of young present in 1940 represent a variation in survival in the nesting period. If there has been any change in the population, it has been a decrease rather than an increase.



Fig. 70. Pod of young White Pelicans on Anaho Island, Pyramid Lake, Nevada. Bird in left foreground has just been banded and is hurrying back to the pod. Gulls in left background ready to seize regurgitated fish.

Now, as at the time of Hall's visit, local residents are convinced that the pelicans are seriously affecting the fishing in the lake. Because of the continued lowering of the lake, it has been practically impossible for several years for trout to ascend the river to spawn, and the relative guiltlessness of the pelicans in taking trout is recognized. The birds are now blamed for the rapid diminution of the runs of Cui-ui (*Chamistes cujus*). This fish also spawns in the river and is affected by water conditions in the same way as the trout, although not as yet so seriously. It is possible that the pelicans take some of these fish in the spawning run, although they would have to compete with the Indians, who rather well cover the river.

With the possibility of damage to fishing in mind, 211 fish regurgitated by the young pelicans were identified. The results are shown in the table where they are compared with the 2897 fish identified by Hall in 1924. Weights of various species are taken from Hall (*op. cit.*) except for *Richardsonius*, the weight of which was calculated from measurements.

Fish fed to young White Pelicans, Anaho Island, Pyramid Lake, Nevada

	Number in 1940	Number in 1924	Per cent by number, 1940	Per cent by number, 1924	Per cent by weight, 1940	Per cent by weight, 1924
Suckers (<i>Catostomus</i> or <i>Pantosteus</i>)	2	5	.9	.2	3.9	.7
Carp (<i>Cyprinus carpio</i>)	25	185	11.8	6.4	60.8	32.6
Red-striped Shiner (<i>Richardsonius egregius</i>)	79	0	37.5	0	2.7	0
Lake Chub (<i>Siphateles obesus</i>)	7	248	3.3	8.6	2.7	6.8
"White Fish" or Lake Minnow (<i>Leucidius pectinifer</i>)	74	2370	35.1	81.8	25.4	58.7
Catfish (<i>Ameiurus nebulosus</i>)	1	24	.5	.8	.2	.4
Sacramento Perch (<i>Archoplites interruptus</i>)	23	65	10.9	2.2	4.3	.9
Totals	211	2897	100.0	100.0	100.0	100.1

No trout or Cui-ui were found, although they were searched for carefully. The percentages by number of the various species differ considerably from those of 1924, but this is largely because of the inclusion of the minnow or red-striped shiner (*Richardsonius egregius*), not found by Hall, and probably taken by the pelicans in the Truckee River, since it has not been reported from the lake itself. This fish is so small that the changes in the percentages by weight are much less. Carp have apparently become more important in the diet, but this apparent change is believed due in part to the activities of the gulls which ate the smaller fish that were regurgitated much more quickly than they did the carp, so that a larger proportion of the latter was counted. It would seem that the pelicans are no more harmful to the fishing in Pyramid Lake than they were in 1924.

One hundred forty-nine young pelicans were given Biological Survey bands (nos. 40-809551-40-809650; 40-809701-40-809750), one individual was inadvertently given a band on each leg. Since, a month earlier, I had banded 450 California Brown Pelicans (*Pelecanus occidentalis californicus*), it was interesting to compare the behavior of the two species. The adult Brown Pelicans showed more concern than the White Pelicans did at the presence of the banders, left eggs or small young less readily, and returned sooner after having been flushed. They flew around in great numbers over the heads of the banders all the time we were in the colony, whereas the White Pelicans simply kept out of the way. The young Brown Pelicans were much noisier than the young White Pelicans. They had many more lice. The young White Pelicans formed pods, and fled



Fig. 71. Half-grown White Pelican.

from the banders en masse and in confusion at a considerably earlier stage of development. The young White Pelicans, or at least the colony, smelled much worse. In fact, the smell of both guano and regurgitated fish was so frightful that I was delighted when Mr. Wallace professed his inability to continue banding after only 150 bands were used, whereas I had been disappointed, when banding the Brown Pelicans, to have to stop after 450.

Aechmophorus occidentalis. Western Grebe. Not mentioned by Hall. Four or five pairs seen on the lake near Sutcliff and near Anaho Island. Young were not observed.

Phalacrocorax auritus ssp. Double-crested Cormorant. Like the pelican, the cormorant appears to have become rarer at Pyramid Lake since 1924. The pinnacles at the north end of the lake are now mostly connected with the shore, and I observed no cormorant nests there when I drove by in a car. Cormorants were reported to be nesting in some numbers on the Pyramid, and about 50 nests were found on the flat shore on the southwest side of Anaho Island in a mixed colony with gulls. A good many of these nests were empty; three contained very small young; nine had one to three well-grown young; two had eggs; 16 contained dead young from about a fourth to half grown. The cause of death could not be determined, but human interference during the previous week of extremely high temperatures is suspected. Eight young were given bands (nos. 34-647093-34-647100).

Ardea herodias ssp. Blue Heron. About 25 pairs were nesting in the dead weeds along shore on the east side of the island. An old nest of some previous year was found on a *Sarcobatus* bush on the west side. Eight of the well-grown young were banded (nos. 40-724973-40-724980). Several of these young took to the water and swam to escape us, though not very strongly, since a light, on-shore breeze brought them in after a few minutes. Nearly half the young in the colony were able to fly a little.



Fig. 72. Young Double-crested Cormorants. One of the few nests containing live young of this age.



Fig. 73. California Gulls at the nesting colony. Note downy young.

Branta canadensis canadensis. Canada Goose. This bird was not mentioned by Hall, but 115, mostly young, used the flat on the southwest side of the island for feeding and roosting. Their tracks, molted feathers and excrement were everywhere. We chose to sleep in this area because of its comparative freedom from rattlesnakes, and the geese spent much of the night swimming up and down past our beds in the bright moonlight, honking dismally from time to time. By morning all were ashore, some far from the water, and a strenuous effort was made to cut these off by a desperate sprint so that they could be banded, but though they are flightless at this time of the year, they made good their escape. It is assumed that the geese bred on the lake, perhaps most of them on the island. The main food of the birds seemed to be salt grass, *Distichlis stricta*.

Anas platyrhynchos platyrhynchos. Mallard. One female with one well-grown young seen near the island.

Chauleasmus streperus. Gadwall. About eight seen near the island.

Mergus merganser americanus. American Merganser. About 60 males seen.

Cathartes aura teter. Turkey Vulture. Eight or 10 over the island, apparently feeding mostly on dead pelicans. At least one recently used nest found in a cave in the rocks.

Oxyechus vociferus vociferus. Killdeer. At least two pairs on the island.

Larus californicus. California Gull. This species also seems to have decreased since 1924. The nesting colony at the north end of the lake which was described by Hall is apparently no longer in use. Whether gulls now nest on the pyramid is not known. There is, however, a colony of about 200 pairs nesting on the flat on the southwest side of Anaho Island. Some of the nests still held eggs, but most of the young were nearly half grown. Some of these took to the water when we approached the colony, although they went only a few yards from land. Forty-five young were banded (nos. 40-671841-40-671885).

Corvus corax sinuatus. American Raven. About eight present.

Salpinctes obsoletus obsoletus. Rock Wren. This was the commonest land bird on the island.

Amphispiza bilineata deserticola. Desert Sparrow. At least one pair present.

Spizella breweri breweri. Brewer Sparrow. At least two pairs noted.

Soil Conservation Service, Berkeley, California, July 15, 1940.

THE NOMENCLATURE AND HABITS OF THE BLACK-THROATED
COPPER-TAILED HUMMINGBIRD

WITH ONE ILLUSTRATION

By ROBERT T. MOORE

The finding of the first nest of the Black-throated Copper-tailed Hummingbird was mentioned briefly by the author in a previous article (Auk, vol. 51, 1934, p. 145). The collecting on Mt. Chimborazo in central Ecuador of a series of intergrades between true *Metallura primolina* and this form (hitherto usually recognized as a full species, *Metallura atrigularis*) makes it necessary to assert their conspecific relationship. Hartert has suggested this relationship but did not have material to prove it. Since the publication of the above-mentioned paper a search of the literature indicates that practically nothing is known of the habits of *atrigularis*. It is deemed desirable, therefore, to give now, in connection with the discussion of the proposed change in the nomenclature, a full account of our experiences with this hummingbird during the reconnaissance of the Sangay region of southeastern Ecuador in 1929.

The recorded history of the Black-throated Copper-tail seems to be confined to a few brief references in technical papers. It was discovered by O. T. Baron in the hills about Sigsig, near Cuenca, in southern Ecuador in or before 1893, and described as *Metallura atrigularis* by Salvin (Bull. Brit. Orn. Club, vol. 1, 1893, p. 49). The topotypical series was deposited in the Rothschild Museum at Tring, England, and with the type came to the American Museum of Natural History at the time of the transfer of the Rothschild Collection. In 1918 Cory (Field Mus. Nat. Hist. Publ. 197, Zool. Ser. 8, Pt. II, p. 268) gave the range as "Southern Ecuador" and that of its congener, true *primolina* as "Northern Ecuador." The next important record of *atrigularis* seems to be the taking of three males by the expeditions of the American Museum in August, 1920 (Chapman, Bull. Amer. Mus. Nat. Hist., vol. 55, 1926, pp. 20, 317) all secured at Taraguacocha, about fifty miles from the type locality. Chapman confirms the geographical range as given by Cory, and restricts the habitat to the Temperate Zone. No other representatives of this form seem to have been obtained until our expedition of 1929 secured them in Temperate-Zone valleys at an elevation from 10,000 to 13,000 feet on the northern margin of the ash canyons of Mt. Sangay, Ecuador, not more than fifty miles east of the type locality.

In July and August of that year we found Black-throated Copper-tails locally common in two mountain basins just below the Paramo Zone, one known as Culebrillas Valley and the other without a name, which we called El Dorado Valley from the name "El Dorado," employed by Carlos Olalla, our Quichau collector, for this hummingbird. This was six miles from Culebrillas Valley across an intervening mountain. Many specimens were secured at Culebrillas, but no nest, although I am confident mating had begun. Subsequently, in El Dorado Valley, on July 25, 1929, my son, Terris Moore, discovered two nests, which appear to be the first ever found of *atrigularis*.

The first nest was placed about six feet above the stream, couched on a few roots which projected from a wall of earth to the right of a large clump of hanging *paja* grass. The entire valley was dotted with great clumps of this giant sword-edged grass, three to four feet high. Few other forms of plant life existed. On July 27th, I visited the nest with my son and found it nearly complete. While we watched, the parent bird went to it several times. Occasionally she sat perfectly still on the limb of a small bush, which projected over the stream several feet to the left. The nest structure was composed of yellowish-green moss and had no special lining, in fact one or two of the small roots



Fig. 74. Nest site of Black-throated Copper-tailed Hummingbird, El Dorado Valley, southeastern Ecuador. Nest number 3 was hidden under the grasses hanging on the right of the rock.

projected through the nest bottom and supported it. Subsequently, on August 7, after ten days of rain, the nest appeared much the same, but it then contained one egg, which was cold; it and the nest were collected. On this date, we watched for an hour, but saw no bird approach.

Nest number two was about a quarter of a mile farther up the same stream. This one was placed in a moss-covered rocky niche half way up a perfectly vertical cliff that was twenty-five feet high. The face of this cliff was covered with numerous ferns, moss, vines and small plants and the whole surface was dripping with water. For twenty-eight days, while we were on the Sangay expedition, rain fell every day and each time we visited this cliff the whole surface was oozing rivulets. It was impossible to reach this nest without a rope, but as the bird was seen repeatedly carrying moss, it is assumed that she was building. It do not believe she was carrying food, because all of the other five nests of this species were either in the process of being built, or contained eggs, even as late as August 7. When approaching the structure, the bird flew directly to a point about three feet in front of it, hovered there a moment, and then darted on to it.

Four other nests were discovered in the same valley in rather similar situations, and all within a mile of each other. Nowhere else in Ecuador did we find any other nests of this subspecies. A nest, attributed to the northern race, *M. p. primolina*, has been reported by me previously (Condor, vol. 36, 1934, p. 103) from Baños de Papallacta in northeastern Ecuador, where *atrigrularis* does not occur.

The third nest was discovered by the author on July 27. It was placed about three feet above the main stream of the valley, under the dependant long blades of the *paja* grass and situated on one side of a huge rock, which projected into the stream. As I watched, a parent bird darted to it several times. The nest was almost completed and consisted of the same kind of moss, this time brownish-tan in color, and placed directly

on the earth against the wall of the rock. On August 7, ten days later, it contained two white eggs. I collected the female parent, as well as the eggs and nest. Like many other hummingbirds, the parent bird continued to line the interior even after she was incubating, the material consisting of a cottony white vegetable down. Small feathers were also employed. Incubation had begun, but the eggs seemed fairly fresh when they were blown.

Of the three nests found on July 27 all were deserted ten days later on August 7, with the exception of one in a difficult situation on the wall of a cliff which was a half mile from the site of nest number two. It could not be examined. Whether the constant rains had anything to do with the desertions, I do not know, but the birds must meet with the same conditions every year, because it rains practically every day during the summer months, according to the reports of the Alao Indians. One of these nests was placed on the brink of a cliff near a large clump of *paja* just to the right of where the main body of water tumbled twenty-five feet precipitously down the rock wall. Another nest was in a crevice of the same cliff, but about five feet below the top and twenty feet to the right of the waterfall. In both cases the parent birds were observed flying back and forth to the nest. Like those of nest number one, they almost invariably poised a few feet in front of the rock cleft before darting into it.

The building maneuvers of the owner of the sixth nest, which was discovered on a cliff about seventy-five feet away from the first one and fifteen feet above the main stream, afforded an unusual opportunity to observe hummingbird technique. On July 27 the structure was half completed. Ensnared in a bunch of grass only fifteen feet away, I was able with my powerful binocular to watch every movement of the bird. Her chief concern was to attach securely the dead moss of the nest to the live moss growing on the wall of the cliff. She would catch her feet into the base of the nest and spread out her tail and wings fan shape, so that she completely covered it. The wings were arched out around the outside of the nest. Holding her wings and tail in this position, she picked vigorously at various points, using her bill like an awl or needle and sticking stray threads of moss in behind the live tendrils of moss on the cliff. Usually her movements were exceedingly rapid. At times the wings and tail did not move and at other times they vibrated at great speed without causing the body to move away from the structure. She seemed to be molding the nest into the shape she desired. I have watched a somewhat similar maneuver performed by the Arizona Broad-billed Hummer of Sinaloa (Auk, vol. 56, 1939, p. 316). The Black-throated Copper-tail continued this performance over a period of at least fifteen minutes. During the two or three days when the nests were under observation by different members of our party no one actually saw building operations in the rain, except this one just described. However, there were only very short periods when it did not rain, and it does not seem conceivable that the birds could have completed their nests unless they built during the almost continuous downpours.

Between August 24 and August 31, 1929, my companion and I secured eight specimens of *Metallura primolina* from the eastern side of Mt. Chimborazo at an elevation of about 13,000 feet near our camp-site, called Quillo Turo by the Indians. The place was just at the tree line and the conditions did not differ materially from those in El Dorado Valley in the Mt. Sangay region, except that due to the long extinct condition of Chimborazo, the plant life is somewhat more varied and the areas of ash are much less extensive. A careful examination of these birds proves that four of the five males show at least traces of the black throat-patch of *atrigrularis*, one of them (no. 2505 Moore Collection) being indistinguishable from true *atrigrularis*, whereas others reveal

smaller black throat-blotches or dots. The fifth male has only two tiny black feathers remaining as a vestige of this character. None of the three females reveals any black throat marks and they are exactly like females of both *atrigrularis* and true *primolina*. Simon (Histoire Naturelle des Trochilidae, Paris, 1921, p. 201) indicates some differences in the coloration of the lateral rectrices of the females of *atrigrularis* and *primolina*, but my specimens do not show this. Nine males and three females of *M. p. primolina* in the Moore Collection were taken at Papallacta at an elevation of about 10,000 feet in northeastern Ecuador, on the Amazonian side of the Andes, and are probably as near to topotypes as any that can be obtained. According to Simon (*op. cit.*, p. 381), the type was taken by Osculati at "Laguano sur le Rio Napo." I doubt very much if this could have been the type locality, for the Rio Napo is in the Tropical Zone of the Amazon Basin, whereas *Metallura primolina* is a Temperate-Zone bird. In my large collections from the Amazon basin not a single specimen of *primolina* occurs. Probably the type came from a higher altitude in the mountains of northern Ecuador.

Mount Chimborazo is situated about fifty miles to the northwest of the Mt. Sangay region and between it and Papallacta. Mount Chimborazo probably represents an intergrading area, where most of the individuals are closer to *atrigrularis*, but some of them have all the characters of *M. p. primolina*. Furthermore, two specimens out of twelve from Papallacta in northeastern Ecuador, nos. 2046 and 2048, which are unquestionably true *primolina*, show tiny spots of black on one or two feathers of the throat. Even if the Chimborazo birds are considered as representatives of *atrigrularis*, the ranges of the two forms have been brought within eighty miles of each other, both localities being at high altitude in the Temperate Zone. The fact that *atrigrularis* differs chiefly from *primolina* in the presence of the black throat, convinces me that they are conspecific. The southern form should, therefore, be known as *Metallura primolina atrigrularis* Salvin and the northern as *Metallura primolina primolina* Bourcier.

California Institute of Technology, Pasadena, California, April 5, 1940.

THE WARBLING VIREO OF THE CAPE DISTRICT OF LOWER CALIFORNIA

WITH TWO ILLUSTRATIONS

By CHARLES G. SIBLEY

In 1858 Baird (Pac. R. R. Repts., vol. 9, p. 336) designated the warbling vireos of the western United States as *Vireo swainsonii*. The Great Basin form was separated as *Vireosylva gilva leucopolis* by Oberholser in 1932 (Sci. Publ. Cleveland Mus. Nat. Hist., vol. 4, p. 9). From the mountains of Chihuahua, Ridgway described *Vireosylva gilva brewsteri* (Proc. Biol. Soc. Wash., vol. 16, 1903, p. 107). Within the past year van Rossem (Trans. San Diego Soc. Nat. Hist., vol. 9, 1940, pp. 77-78) has named *Vireo gilvus connectens* from the state of Guerrero in southern Mexico, and Sutton and Burleigh (Auk, vol. 57, 1940, pp. 398-400) have described *Vireo gilvus eleanorae* from Hidalgo in central eastern Mexico. These three races from the mainland of Mexico constitute an integrating series that establishes Ridgway's belief that the *leucophrys* and *amauronotus* groups of vireos of Central and South America are conspecific with *gilvus*. Breeding birds from the Cape Region of Lower California prove to be another link in this chain. Relationship to the southern forms is shown by the admixture of brown in the back, and that to the races of the United States by the almost immaculate underparts. The differences are sufficient to warrant separation as a distinct race.

Vireo gilvus victoriae, new subspecies. Cape Warbling Vireo.

Type.—Adult male, no. 55808, Museum of Vertebrate Zoology; Laguna Valley, 6000 feet, Victoria Mountains, Lower California, Mexico, July 30, 1929; collected by Chester C. Lamb; original no. 11679.

Subspecific characters.—Compared to *Vireo gilvus swainsonii*, pileum and back browner with only a small amount of green in fresh plumage; green of back restricted to tips of barbs and lost almost entirely in slightly worn plumages; rump lighter and grayer; ventral parts whiter with very little yellow on flanks. Bill heavier in cross section and longer than in either *swainsonii* or *leucopolis*. Wings and tail average shorter than in *swainsonii*.

Range.—Known to breed only in the Victoria Mountains of Lower California. In addition to the 23 specimens from the type locality there are two from Agua Caliente, a few miles southeast of Laguna Valley, that are of this race. Nesting records have been obtained at Triunfo and San Jose del Rancho, both within a few miles of the type locality (Grinnell, Univ. Calif. Publ. Zool., vol. 32, 1928, p. 194).

The 18 adult males and 7 adult females from the Victoria Mountains are consistent in the demonstration of the characters described. There is no apparent difference between the sexes in measurements or coloration.

In the course of this study attention was given to the distribution and characters of *Vireo gilvus leucopolis*. The characters ascribed to it by Oberholser are to be found in specimens in the Museum of Vertebrate Zoology. The following table of comparisons summarizes the differences among the three races examined.

<i>swainsonii</i>	<i>leucopolis</i>	<i>victoriae</i>
Back olive-green	Back grayish, less olive	Back brownish-olive
Rump deep olive-green	Rump olive-gray	Rump light olive-gray
Underparts with considerable olive-yellow on flanks and belly	Underparts with some olive-yellow on flanks	Underparts with very little yellow on flanks
Bill relatively slender	As in <i>swainsonii</i>	Bill much thicker in cross section
Bill shorter than in <i>victoriae</i>	As in <i>swainsonii</i>	Bill longest
Wings and tail longer	As in <i>swainsonii</i>	Wings and tail shorter

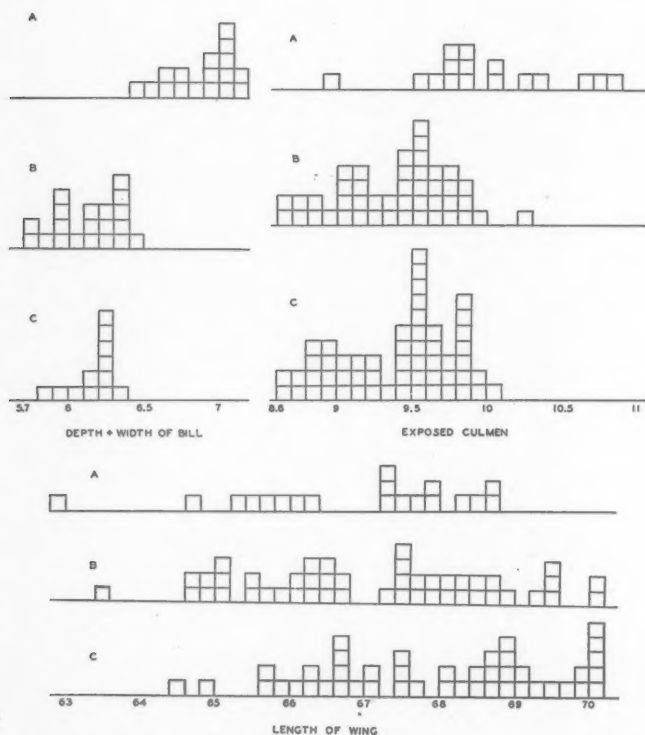


Fig. 75. Measurements in millimeters of adult male warbling vireos. Each square represents a single bird. Bill measurements are summations of depth and width, serving to indicate the massiveness of the whole structure. A, *Vireo gilvus victoriarum*; B, *V. g. swainsonii*; C, *V. g. leucopolius*.

The differences in length of wing and tail between *victoriarum* and the northern races are not statistically significant but indicate a trend that is common to many species with races endemic to the Cape Region. Grinnell (MS) noted these variations in bill, wing, and tail length in *Vireo gilvus* when he examined skins in the Carnegie Museum: "... two skins here from the Cape District have longer bills, shorter wings and smaller tails than Oregon examples. ..." He noted the same differences in birds in the Museum of Comparative Zoology. That he strongly suspected the existence of a distinct race in the Cape District is shown by the following quotation under *Vireo gilvus swainsonii* in his Distributional Summation of the Ornithology of Lower California (p. 194): "Fairly common breeding species in the higher parts of the Cape region (possibly a recognizable race there)."

Vireo gilvus leucopolius. In the collection of the Museum of Vertebrate Zoology are 125 specimens, including 12 topotypes referable to this race. The characters agree with the original description but the form has a much greater range than Oberholser (*loc. cit.*) gave. He stated that it was, "confined . . . in the Warner Valley and to a

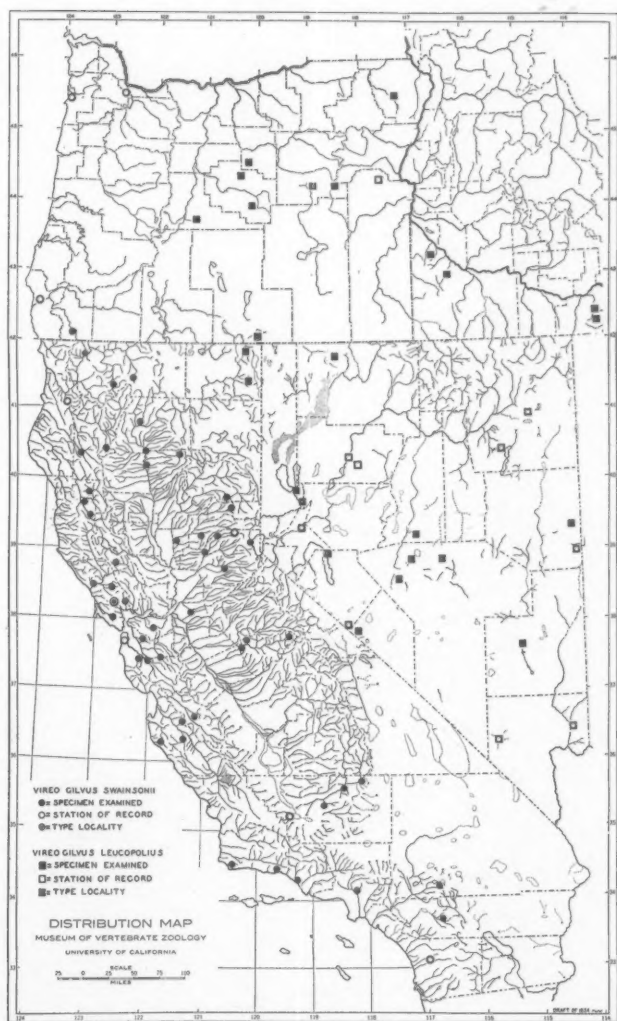


Fig. 76. Distribution of breeding warbling vireos in California and adjacent states.

narrow area north and south of this region. . . .” Its range may be better characterized as the Great Basin. Examples of *leucopolius* have been examined from northeastern California, eastern Oregon and Washington, southern Idaho, western Wyoming, western Utah and practically all sections of Nevada. The range as now delimited lies between

the Cascade-Sierran system on the west and the eastern slope of the Rocky Mountains to the east. It extends from southern Idaho to southern Nevada.

Van Rossem (Pac. Coast Avif. No. 24, 1936, p. 45) states that birds from the Charleston Mountains of southern Nevada present the characters of *leucopolius* but that "selected specimens from the Sierra Nevada and particularly from the mountains of southern California appear to be indistinguishable from the Charleston birds." The Charleston Mountains are geographically isolated from the range of *swainsonii* and in almost every faunal respect show relationships to the Great Basin. The choice of comparative material from the mountains of southern California was unfortunate. There is a noticeable tendency for birds from the San Jacinto and San Bernardino mountains to vary toward *leucopolius*. The region lies at the margin of the range of *swainsonii* and may be affected by continual infiltration of birds from the northeast. Similarly, the Charleston Mountains are in the extreme southwesterly portion of the range of Great Basin forms. These several factors warrant a reconsideration of the status of the Charleston Mountains birds. Comparison with series from the typical areas of each race will probably show that they are better referred to *leucopolius*.

Vireo gilvus swainsonii. The breeding range of this race may be characterized as the Pacific slope, west of the Cascade-Sierran divide, from southern British Columbia to San Diego County in southern California. Occurrences of *swainsonii* in Lower California appear to represent migrants.

It is a pleasure to acknowledge the courtesy of Mr. James Moffitt of the California Academy of Sciences in making the collections under his charge available and the considerate attention to every detail in study and publication given by Dr. Alden H. Miller of the Museum of Vertebrate Zoology.

Museum of Vertebrate Zoology, Berkeley, California, August 22, 1940.

BIRDS OF VALLES, SAN LUIS POTOSÍ, MEXICO

By GEORGE MIKSCH SUTTON and THOMAS D. BURLEIGH

In the course of the John B. Semple expedition of 1939 to eastern Mexico, several points in the low, comparatively flat southeastern part of San Luis Potosí were visited. Extensive collections were made in the vicinity of Tamazunchale and at Valles, towns situated 66 miles apart at between 200 and 300 feet elevation along the highway from Laredo to Mexico City.

Two four-day stops were made at Valles, the first from March 23 to 26, the second (Semple and Sutton only) from April 29 to May 2. Since the birds recorded at this point differ so considerably from those seen at Tamazunchale, we have decided to publish lists from the two regions separately.

The most thoroughly investigated section near Valles was the dry, wooded plateau, about 300 to 400 feet in elevation, extending from two to twelve miles north of town. Here there were grassy, prairielike openings among the trees, thick tangles crossed by cattle trails, and clumps of wild pineapple and palmetto. At the time of our visits most of the larger trees were leafless, and the countryside appeared somewhat desertlike.

The following list of eighty-seven forms includes most of the birds that breed on the uplands near Valles, some that characteristically winter there, and a few that are transients. Since no extensive work was done along any stream in the vicinity, the characteristic waterbirds (kingfishers, herons, ducks, and shorebirds) naturally are missing from our list.

Crypturellus cinnamomeus mexicanus. Mexican Tinamou. Common in the dense woodlands, especially in the *huipilla* (wild pineapple) thickets, but rarely seen. Though its mellow whistling was heard almost constantly during the daylight hours, we actually saw it but seven times. Once, by beating carefully, we drove a bird into the open, where it was obliged to take wing. We were so startled by the noise of its flight that we failed to collect it!

A nest found on May 2 (Sutton) was a shallow depression in a pile of leaves under a dry palmetto leaf in the middle of a thorny tangle. The male bird was at the nest. Almost trampled underfoot, he fluttered off noisily, scurrying about with wings spread and drooping, head lowered, and mouth slightly opened. The two eggs, which were fresh, were lustrous and of a pale tan shade, faintly purplish.

The female of this form is much more heavily marked than the male, our only female (March 25, Sutton) being noticeably barred with buff on the wings, rump, upper tail coverts, nape and ear coverts. The eyes of freshly-killed birds were light yellowish gray, with a narrow zone of pale bluish gray encircling the pupil.

Coragyps atratus. Black Vulture. Common, especially along the highway where, with the Turkey Vulture and Audubon Caracara, it feeds on pigs, dogs, snakes, and other animals that have been killed by passing automobiles.

Cathartes aura. Turkey Vulture. Common.

Accipiter striatus. Sharp-shinned Hawk. An immature bird was noted on two occasions, March 23 and 26.

Buteo magnirostris griseocauda. Gray-tailed Hawk. Fairly common in the more heavily wooded districts. A female taken March 24 and a male taken March 25 evidently were preparing to nest. Several pairs seen from April 29 to May 2 screamed loudly and circled above us, but we found no nest.

Micrastur semitorquatus naso. Lesson Micrastur. A male collected May 2 (Semple) was being mobbed by Brown Jays. The gonads of this specimen were much enlarged. The eyes were dark reddish brown.

Polyborus cheriway audubonii. Audubon Caracara. Fairly common, especially along the highways and in more open country. A female taken May 1 (Sutton) was not incubating.

Falco sparverius. Sparrow Hawk. Noted daily along the highway. Not common, however.

Ortalis vetula vetula. Chachalaca. Fairly common. A male taken April 30 (Sutton) was in breeding condition.

Colinus virginianus maculatus. Spotted-breasted Bob-white. Fairly common. A male (testes slightly enlarged) was taken from a flock March 24 (Sutton).

Columba flavirostris. Red-billed Pigeon. Noted infrequently at Valles, but seen repeatedly to the south near Pujal and at Las Armas.

Zenaidura macroura marginella. Western Mourning Dove. Not common. Two were seen March 24, and a male (with somewhat enlarged testes) of the present race was taken four miles south of town March 25 (wing, 148 mm.; tail, 153).

Zenaida asiatica. White-winged Dove. Rare at Valles, but abundant along the highway to the south, where great flocks were seen near Pujal and south of Las Armas on April 29.

Scardafella inca. Inca Dove. Fairly common, especially about town, where it nests.

Columbigallina passerina. Ground Dove. Not common. Two seen on March 25; five on May 1.

Leptotila verreauxi angelica. White-fronted Dove. Fairly common in the woods from eight to twelve miles north of Valles, females of the present race being collected there March 25 and May 1. Ovaries in these specimens not greatly enlarged.

Aratinga holochlora. Green Parakeet. Several small flocks seen on March 24.

Amazona viridigenalis. Red-crowned Parrot. Not common, but noted daily. Female (ovary not enlarged) taken March 25 (Semple).

Otus asio. Screech Owl. Screech Owls were heard or seen after dark on several occasions, notably on April 29 (a mild, moist evening), but none was collected.

Glaucidium brasilianum. Pigmy Owl. One was heard on the evening of April 20.

Nyctidromus albicollis merrilli. Merrill Pauraque. Fairly common. A female (wing, 167 mm.; tail, 159), with ovary somewhat enlarged, was collected April 29 (Semple).

Antrostomus salvinii. Salvin Whip-poor-will. Common in the dry woodland from two to ten miles north of Valles, where its rapidly repeated *chip-willow* call was heard in the evenings from April 29 to May 2. The gonads of male and female specimens collected were much enlarged.

Chordeiles minor. Nighthawk. Several seen and heard April 20 to May 1.

Nephocetes niger. Black Swift. Several large flocks, thought to be on their way north, noted March 23. Smaller flocks seen at the same place the following day.

Trogonurus ambiguus. Coppery-tailed Trogon. Not common. Single male noted March 24 and 25. A few seen April 29 to May 2, ten miles north of town.

Colaptes cafer. Red-shafted Flicker. Noted infrequently during both visits.

Ceophloeus lineatus. Lineated Woodpecker. Noted but twice: a male, March 25, and a mated pair, May 2.

Centurus aurifrons. Golden-fronted Woodpecker. Fairly common.

Dryobates scalaris symplectus. Texas Ladder-backed Woodpecker. According to Cory (Catalogue of Birds of the Americas, part 2, 1918, p. 495) and Ridgway (Birds of North and Middle America, part 6, 1914, p. 258) the Ladder-backed Woodpecker of the Valles district is *D. s. bairdii* (Malherbe), but in our only specimen (a male in fresh plumage, March 23, Burleigh), the white bars on the back are far too wide for *bairdii* and we are obliged to call the bird *symplectus*. Further material in unworn plumage should be collected. The species is fairly common in the district.

Xiphorhynchus flavigaster flavigaster. Ivory-billed Woodhewer. Not common, but one or two birds seen or heard daily. Male collected March 25 (Burleigh). The song strongly reminded us of that of a Canyon Wren, save that it had no high, accented note at the end.

Thamnophilus doliaus mexicanus. Mexican Ant Shrike. Noted at Valles proper only on May 2, when a mated pair was seen. Commoner farther south, notably in the vicinity of Las Armas, where in the dense, thorny bamboo brakes, its softly-hooted song was heard repeatedly. A mated pair collected there March 26 (Sutton) we have identified as *mexicanus*, the tail in both specimens being long, that of the male measuring 71 mm., 2 mm. longer than the longest-tailed bird in the series of twenty-nine specimens examined by Ridgway.

According to our observations, Valles is at about the northern limit of the range of this species. We did not record it in the vicinity of Gomez Farias, Tamaulipas, in the spring of 1938.

Megarhynchus pitangua mexicanus. Mexican Boat-billed Flycatcher. Fairly common. Male (testes slightly enlarged) collected March 23.

Myiozetetes similis texensis. Giraud Flycatcher. Abundant and noisy, especially about certain fruit-bearing trees. Males with somewhat enlarged testes collected March 23.

Myiarchus tuberculifer lawrencei. Lawrence Flycatcher. Noted but once: a male with small testes taken March 24 (Sutton).

Pitangus sulphuratus. Derby Flycatcher. Noted repeatedly along with several other noisy, com-
bative, yellow-breasted members of the flycatcher tribe. No specimen taken.

Myiochanes pertinax pallidiventris. Coues Flycatcher. Noted but once: a female, with slightly enlarged ovary, taken March 24 (Sutton).

Tyrannus melancholicus. Kingbirds of this species, and presumably of the subspecies *couchii*, were seen repeatedly, but no specimen was taken.

Empidonax sp. Small flycatchers of this genus were seen infrequently.

Tachycineta thalassina. Violet-green Swallow. Small flocks noted March 25 (Burleigh).

Stelgidopteryx ruficollis. Rough-winged Swallow. Small flocks noted March 25 (Burleigh).

Xanthoeca luxuosa luxuosa. Green Jay. Common. A male taken March 24 (Burleigh) had dark brown irides.

Psilorhinus morio. Brown Jay. Seen daily in the heavier woodland. Not common.

Corvus imparatus. Mexican Crow. Fairly common. Breeding pair taken May 1 (Semple and Sutton).

Parus atricristatus atricristatus. Black-crested Titmouse. Fairly common. The wing of a male taken by Burleigh March 24 measures 71.5 mm.

Nannorchilus leucogaster leucogaster. White-bellied Wren. Common in brushy tangles along the highway, where its bright, though not very loud, song was frequently heard in March as well as in May. Male and female specimens taken March 23 and May 1, the latter apparently being ready to nest. The species was more common here than at Gomez Farias, Tamaulipas (see Sutton and Burleigh, Occasional Papers Mus. Zool., Louis. State Univ., no. 3, 1939, p. 36).

Troglodytes domesticus parkmanii. Western House Wren. Noted but once: a female taken March 25 (Sutton).

Thryothorus maculipictus microstictus. Spotted-breasted Wren. Fairly common. Male and female specimens, with small gonads, taken March 23 to 25.

Mimus polyglottos. Mockingbird. Fairly common in more open country.

Toxostoma longirostre. Long-billed Thrasher. Noted several times March 23 to 25.

Turdus migratorius. Robin. A single robin joined the mixed flock of waxwings, flycatchers, orioles, tanagers, and jays that was feeding on berries in trees not far from the highway six miles north of Valles, March 25.

Turdus grayi tamaulipensis. Tamaulipas Gray Robin. Recorded but once: a male, with slightly enlarged testes, taken March 25 (Sutton). Specimen compared directly with the type of *tamaulipensis* at United States National Museum.

Hylocichla guttata. Hermit Thrush. Noted several times, March 23 to 25.

Polioptila caerulea. Blue-gray Gnatcatcher. Fairly common. Birds seen April 29 to May 2 apparently nesting.

Bombycilla cedrorum. Cedar Waxwing. Abundant locally, large flocks being seen in fruiting trees on both our visits.

Lanius ludovicianus mexicanus. Mexican Shrike. Fairly common. Female specimen of present race (tail, 103 mm.) taken March 25 (Burleigh).

Vireo griseus micrus. Small White-eyed Vireo. Seen repeatedly. The only specimen taken, a male with enlarged testes (March 25, Burleigh) represents the present race (wing, 55 mm.; tail, 42).

Vireo bellii medius. Texas Bell Vireo. Recorded with certainty but once: a female taken March 23 by Burleigh. The tail of this specimen measures 44 mm. (a trifle long for *medius*); but the back is too gray and the yellow of the flanks and under tail coverts is too pale for *V. b. bellii*.

Vireo solitarius. Blue-headed Vireo. Noted twice: one March 24, and one May 1.

Mniotilta varia. Black and White Warbler. A male noted March 24.

Vermivora celata. Orange-crowned Warbler. Noted several times, March 23 to 25.

Comptothlypis pitiayumi nigrilora. Sennett Warbler. Noted several times, particularly on March 25, on which date a singing male (wing 52 mm., tail 38 mm.) was collected (Sutton); and on May 1 and 2, when many were seen and heard.

Dendroica coronata. Myrtle Warbler. Recorded daily, but not common, March 23 to 25. Not recorded with certainty April 29 to May 2.

Dendroica auduboni. Audubon Warbler. A few noted on both visits.

Dendroica virens. Black-throated Green Warbler. Recorded only on March 25, when several males were seen.

Seiurus motacilla. Louisiana Water-Thrush. A single bird seen along a small stream just south of town, March 25 (Burleigh).

Icteria virens virens. Yellow-breasted Chat. Seen repeatedly March 25 to 28. The only specimen taken (male, March 25, Burleigh) clearly represents the eastern race (wing, 74.5 mm., tail 73).

Sturnella magna mexicana. Mexican Meadowlark. Rare. Our only specimens, a breeding pair taken ten miles north of town, April 30 (Sutton), are of the present race, the male in particular having the narrow black pectoral crescent, broad dark postocular streak, and dark back and rump that characterize *mexicana*, as compared with *hoopesi*. In one particular only does our male specimen fail to conform with Griscom's concept of the race; the fourth rectrix from the outside is predominantly dark rather than white on the inner web (see Hellmayr, Catalogue of Birds of the Americas, part 10, 1937, p. 213, footnote). The following measurements were taken from our specimens: male, wing 113 mm., tail 72, culmen 32.5, tarsus 42; female, wing 102, tail 64, culmen 30, tarsus 38.

Icterus gularis. Alta Mira Oriole. Fairly common. Half-finished nest found about fifteen feet from ground in leafless, thorny tree, May 2 (Sutton).

Icterus graduacauda. Black-headed Oriole. Not common, but noted daily, especially about fruit-bearing trees.

Icterus cucullatus cucullatus. Hooded Oriole. Fairly common, especially about bananas and palmettos in town. Our only specimen, a male (March 24, Burleigh), is in first breeding plumage.

Cassidix mexicanus. Great-tailed Grackle. Not abundant, but noticeable, especially in town where males devoted themselves to singing and courtship display.

Tangavius aeneus aeneus. Red-eyed Cowbird. Not common, but noted daily. Male of this race collected May 1 (Sutton).

Dives dives dives. Sumichrast Blackbird. Noted but once near Valles proper; a single bird on March 24 (Sutton). Much more common about Las Armas, where a female was taken March 26 (Burleigh). Valles apparently is at the northern limit of the range of this interesting genus. We did not record it in the vicinity of Gomez Farias, Tamaulipas, in the spring of 1938.

Piranga rubra rubra. Summer Tanager. Noted several times, March 23 to 25. Our only specimen, a female (March 26, Sutton), is of the present race.

Tanagra laeta laeta. Bonaparte Euphonia. Not common but noted daily. Adult and subadult male of present race taken March 23 and 25, respectively.

Tanagra affinis. Lesson Euphonia. Uncommon, but noted daily. Our only specimen (March 25, Sutton) is an adult male.

Rhodothraupis celaeno. Crimson-collared Grosbeak. Seen repeatedly; adult males taken March 24 and May 1 (Semple). Common at Las Armas, March 26 (Burleigh).

Richmondia cardinalis. Cardinal. Uncommon, though noted daily.

Pyrrhuloxia sinuata. Pyrrhuloxia. Noted only about town in thorny thickets.

Cyanocompsa parellina lucida. Bright Blue Bunting. Not common. Two male specimens (March 23 and 24) are not quite as bright blue below as the type of *lucida*, but they are too bright for *C. p. parellina* or *benefacita* Bangs; the single female (March 23) is far too pale below for either of these races. The more we investigate *benefacita* the less clearly do we comprehend its range. Described from Santa Leonor, Tamaulipas (supposedly in the southwestern part of the State), its range would seem to overlap that of *lucida* to some extent if, indeed, our Victoria (Tamaulipas) and three Valles specimens represent a breeding rather than a transient population. When the exact position of Santa Leonor is made clear, the difficulty may be cleared up.

Passerina versicolor versicolor. Varied Bunting. Recorded but once: a male of present race collected March 24 (Sutton).

Tiaris olivacea pusilla. Mexican Grassquit. Fairly common. Adult males (with small testes) of present race collected March 23 and 24.

Sporophila moreletii. Seedeater. Uncommon, one or two being noted daily on both visits.

Saltator coerulescens grandis. Lichtenstein Saltator. Rare. Two females (not in breeding condition) of present race taken March 24.

Arremonops rufivirgatus. Texas Sparrow. Fairly common. Noted repeatedly on both visits.

Ammodramus savannarum perpallidus. Western Grasshopper Sparrow. This species was noted several times in open, grassy places. The only specimen collected (male, March 23, Burleigh) is of this small-billed race; the wing measures 65 mm., the tail 47.

Melospiza lincolni lincolni. Lincoln Sparrow. Noted several times. Our only specimen (male, March 25, Burleigh) represents the eastern race.

Cornell University, Ithaca, New York, May 2, 1940.

FROM FIELD AND STUDY

A Hummingbird Accident.—On March 25, 1940, Colonel Oscar Krupp, Commanding Officer of the government arsenal at Benicia, California, informed me of the presence of a dead hummingbird hanging by the bill in the screen enclosing the front porch of his quarters. He took me to the scene and I took the accompanying picture (fig. 77).



Fig. 77. Anna Hummingbird killed by flight into porch screen at Benicia Arsenal, Benicia, California.

With little doubt, the bird, which was a male Anna Hummingbird (*Calypte anna*), in attempting a transverse flight through the porch at a height of about ten feet from the ground, did not see the screening and crashed into it. The mesh of the screen was of just the right size to accommodate the long bill which was wedged therein to the base.

Hummers are much in evidence about the trees and flowers of the "officers' row" at the arsenal and the Anna Hummingbird breeds there commonly.—EMERSON A. STONER, Benicia, California, June 13, 1940.

Nesting of Ruby-crowned Kinglet at Redlands, California.—Throughout the years

1938 and 1939 and the spring of 1940, Western Ruby-crowned Kinglets (*Regulus calendula cineraceus*) have been observed regularly in Prospect Park, Redlands, California. On April 24, 1940, we were fortunate enough to find there a young Ruby-crowned Kinglet at the base of a pepper tree. While we were still at close range, an adult, probably the female, approached with an insect in its bill and fed the young bird. We notified Harold Hill of the discovery and later he banded the young bird. After it was banded it was fed by the male bird, whose ruby crown-patch was plainly visible at the time. On April 25, 1940, I succeeded in finding the nest in a near-by olive tree. It also contained young. The nest was later collected.—MILTON MOORE and DONALD MOORE, Prospect Park, Redlands, California, June 18, 1940.

The Lucy Warbler in New Mexico.—When Florence Merriam Bailey's book, the "Birds of New Mexico," was published in 1928, only one record of the Lucy Warbler (*Vermivora luciae*) was known from the State. This was a specimen taken by M. French Gilman on May 19, 1907, in the northwestern corner of New Mexico, at Shiprock on the San Juan River. Examination of subsequent literature reveals no later published record for the State.

The writers spent the period from February 13 to June 4, 1937, on field work in the southwestern corner of New Mexico. During this time the Lucy Warbler was frequently noted, and subsequent correspondence with ornithologists discloses some additional unpublished occurrences for New Mexico, which, by permission of the observers, we here record with our own.

May 14, 1928. A male collected at nest near Redrock by J. Stokley Ligon, of Carlsbad, New Mexico.

June 30, 1929. A nesting male taken on the Gila River at mouth of Mogollon Creek by R. T. Kellogg. This specimen is now in Mr. Kellogg's collection at Silver City.

April 17, 1932. A pair seen and the female taken by R. T. Kellogg at Redrock. Specimen now in Mr. Kellogg's collection at Silver City.

May 1, 1932. Female taken on the Gila River near Cliff by R. T. Kellogg. Specimen now in Mr. Kellogg's collection at Silver City.

May 17, 1932. Considered by R. T. Kellogg to be one of the common birds in Guadalupe Canyon in the southwestern corner of New Mexico.

April 9-12, 1937. Found to be one of the common birds in Whitewater Canyon, about seven miles northeast of Glenwood by Mellinger and Stewart. One male was collected on April 9 and another on April 10. One of these was deposited in the collection of the American Museum of Natural History at New York, and the other remains in Stewart's collection.

April 17-19, 1937. At least one noted daily near camp on the Gila River about one mile south of Cliff by Mellinger and Stewart.

April 29, 1937. One found along Gila River about midway between Cliff and Redrock by Mellinger and Stewart.

May 7-17, 1937. Four nesting pairs found within a mile of camp on the Gila River near Redrock, by Mellinger, Stewart, and Leeman Green of Safford, Arizona. Two males were collected on May 8 and 12, respectively, at the above locality and are now in the Randolph Jenks collection at Tucson, Arizona.

The above data would indicate that the Lucy Warbler is a common summer resident up the Gila Valley at least to Cliff, and at least during one breeding season occurred in abundance in Guadalupe Canyon. It probably occurs during migration in suitable localities along the entire western edge of New Mexico. Further field work will doubtless produce records to extend this bird's regular breeding range farther up the Gila Valley, and also to include the several other river valleys of western New Mexico.

The writers are indebted to Mr. Randolph Jenks for permission to publish the portion of these notes which were made while working under him; and to Messrs. Ralph Todd Kellogg and J. Stokley Ligon for placing their records at our disposal.—E. O. MELLINGER, *North Lima, Ohio*, and PAUL A. STEWART, *Leetonia, Ohio*, May 27, 1940.

A Large Set of the Black Oyster-catcher.—On June 15, 1935, while making observations at Castle Rock, off Crescent City, California, we chanced upon a set of five eggs of the Black Oyster-catcher, *Haematopus bachmani*. It was the usual nest consisting of a slight depression in the gravel beach. It is highly improbable that the eggs had been laid by two birds, as there were only two pairs of oyster-catchers on the whole island and each pair had a set of eggs. The usual number of eggs is two or three (Bent, U. S. Nat. Mus. Bull. 146, 1929, p. 321).—L. ZERLANG and T. FRASER, *Eureka, California*, July 12, 1940.

Notes from the Salton Sea, California.—*Grus canadensis tabida*. Sandhill Crane. Among some specimens of cranes that were collected near the south end of the Salton Sea on March 2, 1940, for a habitat group at the San Diego Natural History Museum one individual was found to be a female Sandhill Crane. This has been preserved for the study collection of the San Diego Society of Natural History (no. 18110). The others were all Little Brown Cranes (*Grus canadensis canadensis*), which were fairly common until they left the region about April 3, according to Luther C. Goldman, federal agent in charge of the Salton Sea Wildlife Refuge.

Rallus obsoletus yumanensis. Yuma Clapper Rail. On May 13, E. E. Sechrist of San Diego presented to the San Diego Society of Natural History the skin of a male Yuma Clapper Rail (no. 18185), which he had captured by hand on May 11 at the Salton Sea. It was undoubtedly sick, for it permitted him to approach and pick it up, while he was searching for nests of the species. At the writer's request, he prepared the following notes on the discovery, by himself and his companion, Harry Heaton, of five occupied nests of this bird, which are believed to be the first on record. The only Yuma Clapper Rail's egg previously known was taken from the oviduct of a female collected on May 27, 1921 (see Bent, U. S. Nat. Mus. Bull. 135, 1926, p. 276).

"After planning for many years to run down the rare Yuma Clapper Rail, Heaton and I finally got around to it in 1940 when we made three trips of two days each to the Salton Sea, on May 4-5, May 11-12, and May 25-26. The marsh consists of thousands of acres of cattails and other growths running around the eastern end of the sea, and our first day and a half of diligent search yielded absolutely nothing, although we heard rails in several localities. However, on the afternoon of May 5, a nest was found containing one egg and a little later a second with two eggs, beside two empty nests. The following week-end we returned and spent the entire day of the 11th looking in another area, but without luck, although birds were heard. The voice of this rail is similar to that of the Light-footed Rail, but of a different tone. On the 12th we returned to nest no. 1 and found that it had been destroyed by some animal, raccoon and coyote tracks being plentiful. No. 2 fortunately contained a set of six eggs and of the two other nests, one was still empty and the other contained a nice fresh set of seven eggs. Before leaving the marsh we discovered a new nest which contained seven slightly incubated eggs, the bird flushing from almost under my nose. Of the five nests found, three were of black sticks with a few dead leaves on them and the other two were made of fine stems with dry blossoms on them. Two of the nests were on small mud hummocks, while the other three were in crotches of small shrubs just above the water in dense cattail and tamarisk associations. The water varied in depth from a few inches to knee deep. The eggs are the size of those of the King Rail, but

are more highly colored, more extensively marked, and generally brighter. As the work was very exhausting, both from the hard traveling in the marsh and from the intense heat, we did not return until May 25 and then only because of some empty nests that had shown good prospects. Some of these turned out to be the nests of Florida Gallinules, but on May 26, after searching all morning, we discovered another rail's nest with six slightly incubated eggs. This was the best built nest so far found."

Gelochelidon nilotica aranea. Gull-billed Tern. These birds were found by the museum's representatives to be common in April and were observed feeding over fields as far west as Westmorland, south to Brawley and east to Calipatria. Those collected were taken in late afternoon on April 11 and 12, 1940, as they were returning from their feeding grounds to the Salton Sea. Their stomachs were filled with grasshoppers. Bernard Bailey, of the museum staff, reported: "On April 11, I discovered a 'pass' where these birds were flying toward Salton Sea. I arrived at this point at 5 p.m. when the birds were already passing by. On the 12th, I arrived at 4:50, but no birds were seen until 5:12. From then until 6:20, birds passed over at frequent intervals, after which none were seen. A total of 194 birds flew during this time over a 'pass' not over 300 yards wide. On this night the birds did not seem to me to be nearly as numerous as on the previous evening, when the flight ended at 6:45 p.m. I believe the numbers on April 11 would have been between 450 and 500, had they been counted as they were on the 12th."

Hydroprogne caspia imperator. Caspian Tern. One of these birds was seen by Bailey on April 13, 1940, and one by Lewis W. Walker, also of the museum staff, on April 18. Five or six pairs were said by Luther Goldman to nest on one of the islands in Salton Sea.

Phalaenoptilus nuttallii hueyi. Desert Poor-will. A nest believed to be of this form, with newly hatched young, was found on May 11, 1940, by Messrs. Sechrist and Heaton. It was on a bare spot under a small bush, in very rocky ground near the eastern end of the Salton Sea. It was discovered by flushing the parent bird, and is apparently the first recorded nesting of the Desert Poor-will.—CLINTON G. ABBOTT, *San Diego Society of Natural History, San Diego, California, July 19, 1940.*

Lark Bunting in Riverside and San Bernardino Counties, California.—Records of the occurrence of the Lark Bunting (*Calamospiza melanocorys*) in this vicinity are so few that it was with great interest that I examined at close range a flock of fully thirty on February 25, 1940, between Winchester and Elsinore in Riverside County. Males and females were present in about equal numbers. On March 3, 1940, Lark Buntings were abundant between Amboy and Ludlow in San Bernardino County and the females seemed to outnumber the males.—WILSON C. HANNA, *Colton, California, March 11, 1940.*

An Observation on the Feeding of the Southern Bald Eagle.—That bald eagles feed on waterfowl and seabirds is well known. A note entitled "More about Hawks" by A. Brazier Howell (Condor, vol. 32, 1930, p. 157) presents the author's conviction that raptorial birds usually capture more sick than healthy birds. In the light of this statement, the following note may be of interest.

On March 1, 1939, in company with Henry Isham, I spent about two hours watching the activities of a family of Southern Bald Eagles (*Haliaeetus leucocephalus leucocephalus*) on and around the partially ice-covered surface of Baldwin Lake, at an altitude of 6,674 feet in the San Bernardino Mountains, California. We watched the birds from the road with powerful binoculars. The lake is perhaps a mile long by half a mile wide and the portion nearest to us comprised an ice-locked patch of open water several hundred square yards in area, where there were about twenty ducks and approximately twice that number of Coots (*Fulica americana americana*).

Our attention was first attracted to an adult eagle sitting on the snow-covered ice. Examining the bird through the binoculars, we found that it was eating a coot. It continued to feed for some minutes, then flew to a dead tree across the lake where two immature eagles were perched. One took off and glided toward a flock of coots that had left the open water and were meandering about on the ice. As the young eagle approached, the coots scattered wildly. One of these the eagle chose and as the luckless bird taxied for a takeoff, the talons of the eagle reached down, clutching it near the middle of the back. The coot raised its head, stretching its neck to full length in a last convulsion, then its feebly waving feet and head hung down limply. The eagle soared on for perhaps fifty yards, then alighted gracefully on the ice. For approximately five minutes it sat over its kill, appearing simply to inspect it without eating. It then flew back to the tree, without its prey, and alighted near the other two birds.

Flying toward the open water five minutes later, the adult eagle was followed at two-minute intervals by the young birds. They all circled between twenty and fifty feet above the ducks and coots

on the water, which, strangely enough, apparently paid no attention to them. However, the eagles made no more attacks on the waterfowl while we were there.

The ice was strewn for several hundred yards around the central pond with the remains of ducks and coots. Through the glasses we counted 130 individual patches of feathers, some of which, because of their lighter appearance, we assumed to be duck feathers. Along the leeward edge of the pool lay a windrow of either feathers, or dead birds, perhaps both, which we estimated to be over a foot wide by twenty-five feet long.

On a small patch of open water near the road, where the lake curves away to the west of the portion just described, we found a number of dead coots floating close to the shore. We counted fifty and there were many more. Ten of these birds I picked up and examined carefully, but none showed signs of violent death. There were no marks on them, thus indicating that they had died of causes other than the eagles.

In spite of the fact that we had seen an eagle kill a coot, the evidence of the dead birds made us wonder if perhaps many of the patches seen on the ice and around the edges of the ice-locked pool were not the remains of birds which had died like the birds near the shore, and had later been partly eaten by the reputedly scavenger eagles.—KARL W. KENYON, *Pomona College, Claremont, California, April 25, 1940.*

Notes from San Luis Obispo and Santa Barbara Counties.—The paucity of California records of the Black Pigeon Hawk, *Falco columbarius suckleyi*, warrants the recording of two specimens from Santa Barbara County that are now in the collections of the Santa Barbara Museum of Natural History. One is an immature male taken by W. G. Abbott on April 6, 1932, in the city of Santa Barbara (no. 1863); the other a female taken in Montecito, about four miles east of Santa Barbara on January 25, 1940 (no. 3757). The latter specimen was observed chasing small birds through the trees by Mr. Hugh P. Dearing. When dissected, the stomach contained a few feathers and the tarsus and toes of *Passerculus sandwichensis* subsp.

On July 19, 1939, Mr. W. H. James reported a Band-tailed Pigeon (*Columba fasciata fasciata*) nesting on the William R. Dickinson estate in Hope Ranch Park, which is about three and one-half miles west of Santa Barbara. The writer and an assistant immediately went to examine the nest. It was situated in a live oak. The tree was a very large one and the nest was about forty-five feet from the ground. It contained a young bird approximately two days old. Several days later, this nest was again visited, but the young bird had been destroyed, part of a wing still being in the nest.

A male Western White-winged Dove (*Melopelia asiatica mearnsi*) was taken on October 19, 1939, at Dune Lakes near Oceano, San Luis Obispo County. Although this species occurs along the Colorado River in the extreme southern part of the state, its presence so far north is rare. The specimen is no. 3740 in the collection of the Santa Barbara Museum of Natural History.

Although the Hooded Merganser (*Lophodytes cucullatus*) has been recorded a number of times from California, it is uncommon enough to be mentioned. An immature male was taken on October 26, 1939, at Dune Lakes, San Luis Obispo County. The specimen is now no. 3743 in the collection of the Santa Barbara Museum of Natural History.—EGMONT Z. RETT, *Santa Barbara Museum of Natural History, Santa Barbara, California, July 8, 1940.*

A Record of the Eastern Mockingbird in British Columbia.—It may be of interest to record the taking of a Mockingbird (*Mimus polyglottos*) in British Columbia at Duncan, Vancouver Island, on January 20, 1940. The bird was under observation for several days and was noted to be feeding on discarded apples and holly berries. Although its feeding habits were dissimilar, it was first thought to be an albinistic Townsend Solitaire (*Myadestes townsendi*). When recognized after collection, the skin was sent to Major Allan Brooks, who tentatively determined it to be the eastern form, *M. p. polyglottos* (skin now in his collection). This was confirmed by Dr. Alden H. Miller of the Museum of Vertebrate Zoology. There is one previous record for the species on Vancouver Island reported by Racey (Can. Field Nat., vol. 47, 1933, p. 159). The race to which this bird belonged was not determined inasmuch as it was not collected.—DENNIS ASHBY, *Duncan, Vancouver Island, British Columbia, May 14, 1940.*

Winter Record of Burrowing Owl in Northern California.—On January 20, 1940, while I was making observations on waterfowl in the vicinity of Lower Klamath Lake, California, a Burrowing Owl (*Speotyto cunicularia hypugaea*) was seen near the northwest corner of the lake. When disturbed, the owl flew away, giving a single typical call, and disappeared behind a ridge. Examination of the burrow where it had been revealed only one old pellet and several whitish liquid fecal splashes. The pellet contained mouse hair and remnants of several ground beetles.—CLARENCE A. SOOTER, *Bureau of Biological Survey, Burns, Oregon, June 15, 1940.*

NOTES AND NEWS

The National Association of Audubon Societies has just announced that it is establishing a representative of that organization with headquarters in California. This is the first time that the National Association has been able to provide in this way for the development of the Societies' program in the West. Mr. C. A. Harwell, who has served as Park Naturalist at Yosemite National Park for the past eleven years, is resigning to accept this new position. His duties will include the organization of new Audubon societies in cities and towns in the State where none now exist, the coordination of the work of existing Audubon units, lecturing and radio programs, and the furtherance of conservation and protection of wild birds and animals in accordance with policies of the National Association.—A. H. M.

utes of the Northern Division for March were read and approved. Names proposed for membership were: Arthur E. Hutchinson, 184 South Main Street, Cedar City, Utah, by Lawrence V. Compton, and Mrs. T. Eric Reynolds, 140 Estates Drive, Piedmont, California, by Hilda W. Grinnell.

Field notes were numerous. Joe Marshall had seen Red-breasted Nuthatches on the Berkeley campus until April 19. Mrs. Kelly noted an Olive-sided Flycatcher at the Greek Theater April 17, and the Lazuli Bunting and Ash-throated Flycatcher at Saint Mary's College, April 20. Mrs. Allen reported a Varied Thrush at Alum Rock, near San Jose, April 24. Mr. Axtell, of Courtland, New York, who has been particularly interested in the shorebirds at Alameda, reported a Pacific Golden Plover on Bay Farm Island,

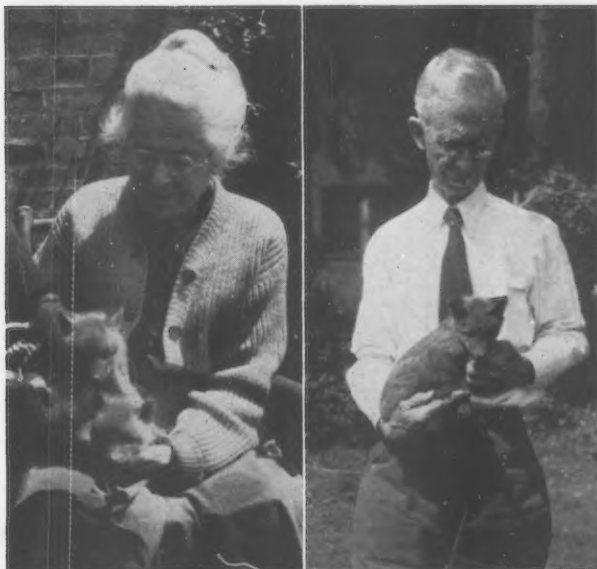


Fig. 78. Florence Merriam Bailey and Vernon Bailey, far known for their life time devotion to the study of birds and mammals.

MINUTES OF COOPER CLUB MEETINGS NORTHERN DIVISION

APRIL.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held on Thursday, April 25, 1940, at 8 p.m., in room 2503 Life Sciences Building, Berkeley, with President Painton in the chair and about 100 members and guests present. Min-

April 20. A nest of the *Phainopepla* was discovered in Arroyo Mocho near Livermore, on April 15, by Mrs. Saunders. Dr. Painton described a concerted attack by nine Brown Towhees on a wounded California Jay, which he had shot because of its depredations on nests in his garden.

The evening's program was presented by Dr. and Mrs. T. Eric Reynolds, who showed several

reels of colored motion pictures of California birds. Their pictures covered a wide range of habitats in the state, although many excellent studies were made in the garden of their home in Piedmont. Pelican nesting colonies at Tulare Lake, with newly hatched young, and gull colonies in Modoc County were outstanding for beauty of background, as well as portrayal of the birds.

Adjourned.—FRANCES CARTER, *Recording Secretary*.

SOUTHERN DIVISION

APRIL.—The monthly meeting of the Southern Division of the Cooper Ornithological Club was held at the Los Angeles Museum on Tuesday, April 30, 1940, at 8 p.m., with Robert T. Moore presiding and about 75 members and guests present.

The minutes of the February meeting were approved as read. Five applications for membership were read as follows: William E. Brooks, 4008 North Seventh Street, Phoenix, Arizona, and Howard Lyman Cogswell, 2420 West Grand Avenue, Alhambra, California, by W. Lee Chambers; Miss Frances Leon Cramer, 921 West 36th Place, Los Angeles, California, by Joseph S. Dixon; and Robert H. Gensch, Division of Wildlife Research, Bureau of Biological Survey, Washington, D. C., and Miss Helen Steele Pratt, 2451 Ridge View Avenue, Eagle Rock, California, by John McB. Robertson.

A motion initiated by Dr. Loye Miller and seconded by the secretary to suspend the regular meeting of May 28 in favor of an outdoor meeting on May 26 was unanimously carried.

Mr. W. Lee Chambers, C. V. Duff, and Mrs. Mary V. Hood supported a proposal to visit Tucker's Hummingbird Sanctuary near Orange, California.

A motion instructing the president or other officers of the club to arrange at their own discretion an outdoor meeting for May was initiated by Dr. Loye Miller, seconded by J. F. Wornus, and unanimously carried.

George Willett reported receipt of a very good book on the "Birds of Oregon" by Ira N. Gabrielson and Stanley G. Jewett, published by Oregon State College, Corvallis, Oregon.

Dr. Loye Miller reported that while on a trip into Arizona with Mr. W. J. Sheffler he found a sparrow hawk nest with five pure white eggs. The "female" hawk's breast was suffused with rufous almost to the exclusion of normal female streaking. The lesser coverts and primaries were centered with blue and edged with chestnut, yet the bird was female in size and performance. He suggested that this hawk might have had a hormonal disturbance because the shells of the eggs were imperfectly formed, being roughened and with abnormal projections.

Motion pictures depicting a trip on the Mohave Desert by Mr. Arthur Barr was the feature of the evening. In addition to the pictures of mammals and reptiles, there were photographic studies of Sparrow Hawk, Poor-will, Mourning Dove, House Finch, and Road-runner. An additional reel showed many interesting views of types of food, method of feeding, and flight habits of the Horned Owl.

Adjourned.—SHERWIN F. WOOD, *Secretary*.

STANFORD CHAPTER

MARCH.—The Stanford Chapter of the Cooper Ornithological Club held its regular monthly meeting on Friday, March 8, 1940, at Jordan Hall, Stanford University. The minutes for February were read and approved. It was decided to hold the meetings earlier, at 7:45, and to finish the business more quickly in order to allow more time for the speaker.

Dr. Hilda Hempl Heller, the speaker of the evening, told about collecting Oil-birds in the Peruvian mountains. A Field Museum collecting trip under the leadership of Dr. Edmund Heller entered the Laga River region in Peru in 1922, and after many adventures reached a section of the country where caves were known to be inhabited by Oil-birds. The Oil-bird (*Steatornis caripensis*), a goatsucker, dwells in caves and feeds nocturnally. In an inner cave of a group of three having many stalactites and stalagmites, the field party discovered many bulky nests of dung, built up in solid masses on the stalagmites through the years. The floors of the caves were covered with the nuts of the fruits eaten by the birds. Thousands of birds were in the cave, from which they departed each evening in a strangely silent flight. Oil-birds are one of the principal sources of fat for the Peruvians.

Adjourned.—MARION JO THEOBALD, *Secretary*.

APRIL.—The monthly meeting of the Stanford Chapter of the Cooper Ornithological Club was called to order by President Jack Applegarth on April 12, 1940, in Jordan Hall, Stanford University. The minutes for March were read and approved. Invitations were extended by the Stanford Natural History Club to join in a trip to the Farallon Islands on April 14. Dr. Painton reported on the birds seen by him on a recent trip to Death Valley, and also gave a brief resumé of a recent trip by the Santa Clara Audubon Society to the Pinnacles National Monument. Dr. Robert Rhodes then spoke on the skeleton of birds. Illustrating his talk by the skeletons of a man, a reptile, a cat and several large birds, he emphasized the adaptations made for the specialized existence of different vertebrate animals.

Adjourned.—MARION JO THEOBALD, *Secretary*.

MI

For Sale, Exchange and Want Column.—Each Cooper Club member is entitled to one advertising notice in any issue of *The Condor* free. Notices of over ten lines will be charged for at the rate of 15 cents per line. For this department, address JOHN McB. ROBERTSON, Buena Park, California.

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FOR SALE—I have some copies of Bent's Life Histories as follows: Bulletin No. 113, Gulls and Terns, \$4.00; No. 142, Shore birds, Part 1, \$3.00; and No. 146, Shore birds, Part 2, \$3.00.—F. M. DILLE, Nogales, Arizona.

FOR SALE—From the library of Dr. Guy C. Rich the following books are offered at these low prices: Bird-Lore complete, unbound, \$50.00; The Oologist, complete, \$40.00; Birds of Massachusetts and other New England States, by Forbush, 3 vols., \$15.00; History of North American Land Birds, by Baird, Brewer and Ridgway, 3 vols., 1905, \$15.00; and a number of popular bird books at \$0.50 and \$1.00 a volume.—W. LEE CHAMBERS, 2068 Escarpa Drive, Eagle Rock, Calif.

FOR SALE—Copies of Mrs. Bailey's Birds of New Mexico are still available at the original price of \$5.00; \$10.00 for the de luxe edition.—DEPARTMENT OF GAME AND FISH, Capitol Building, Santa Fe, New Mexico.

THE 32ND BIENNIAL EDITION OF THE NATURALIST'S DIRECTORY will be published in September. This Directory comprises the names, addresses and special subjects of interest of naturalists in all parts of North and South America as well as a list of Scientific Periodicals and Natural History Museums. The price is \$2.50; published by THE NATURALIST'S DIRECTORY, Salem, Mass.

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